

MAY 1924~No 220

Monthly

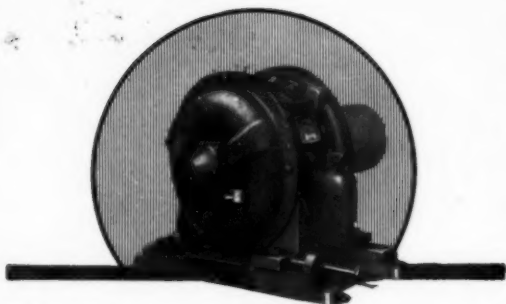
A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL
BLUE BOOK**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A.H.HITCHCOCK
1220-1235 Caxton Building
Chicago

FOR INDEXES SEE LAST PAGES



We learn a lot from users

That is why we go to them first when designing motors. No man can be responsible for the operation of three hundred to a thousand motors without getting very much acquainted with their details of construction. He knows what these details mean in terms of service. He learns much of value to pass on to the motor builder.

The design of Type AA Reliance Induction Motors was based on the practical experience of twenty-five such men in ten lines of industry. Following their recommendations we have built Type AA motors to give satisfaction in vital spots such as stator insulation, bearings, and rotor construction.

Reliance Electric & Engineering Co.

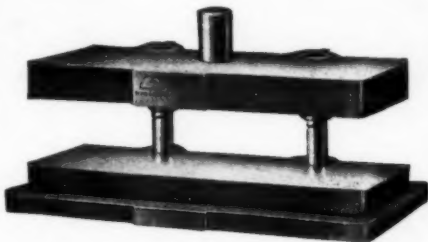
1050 Ivanhoe Road, Cleveland, Ohio

Branches:

Boston New York Philadelphia Pittsburgh Chicago Detroit Cincinnati

*We specialize in motors, sizes 1/2 to 200 h. p. constant and adjustable speed
D. C.; squirrel cage and slip ring A. C.*

Type **AA** RELIANCE Induction Motors



Why Make Die Sets

When you can buy our standard machined sets that are as good, or better, can get them immediately, and save money?

If you knew what we can do for you, of how much trouble we can relieve you, how much good dollar-or-more-an-hour time we can turn from waste to profit, and how much we can reduce your die making costs, you would never let another set of standard dies go through your tool room.

We have developed a real service for manufacturers using dies, of which we want to tell you. May we? Just say "Yes," and a whole bookful of information, styles and sizes will go to you by first post—the whole story without cost and no obligation. Don't miss the opportunity; say yes in a letter, on a post card, anything with your name and address on it.

And Now is the Accepted Time

Danly Machine Specialties, Inc.

4913 Lincoln Ave., Chicago, Illinois

AUTO REPAIR SHOPS

**The Whitney Cylinder Grinder Will Make Money
For You Regrinding Automobile Cylinders**

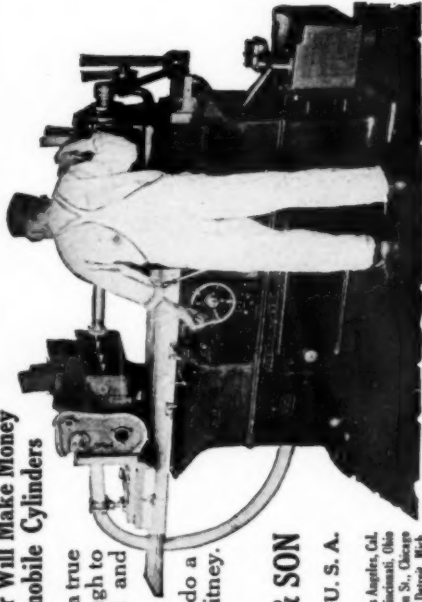
The grinding wheel travels in a true circle and grinds off only enough to make a hole that is round and straight. This machine does the work right and does it quick. That's why you can do a profitable business with a Whitney.

Write for new catalog

BAXTER D. WHITNEY & SON
Incorporated
WINCHENDON, MASS., U. S. A.

Selling Agents:

BERGER & CARTER CO., 470 E. Third St., Los Angeles, Cal.
J. A. KINSEY & CO., Indianapolis, Ind., and Cincinnati, Ohio
MARSHALL & HUSCHART MCHY. CO., 17 So. Jefferson St., Chicago
CADILLAC MACHINE CO., Beaubien & E. Lafayette Sts., Detroit, Mich.



The La Salle No. 2 Speeds Automatic Surface Grinding

GRINDS WORK

20" Long

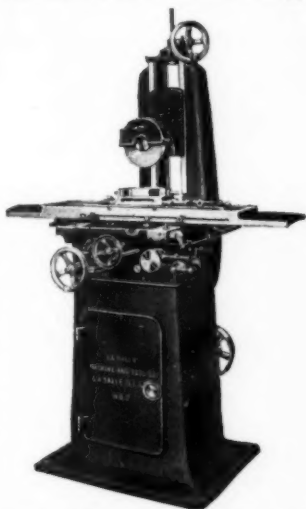
6" Wide

10" High

WITH A

7" Wheel

Table travels automatically in both directions. A hand-power table movement can be operated without changing automatic feed. Also has automatic cross feed in either direction with automatic stop. Wheel truing device is built integral with machine.



EXPERIENCE has demonstrated the superiority of this type of machine for grinding dies, punches and a wide range of small tools, as well as for many manufacturing jobs, such as finishing bright and true surfaces, and parts of tools and instruments.

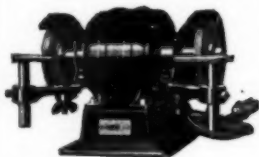
THE IMPROVED DESIGN of the La Salle No. 2, combining great rigidity, perfect alignment and exceptional ease of manipulation, places it in the first class as an ideal tool for work within its range. Net weight, 1,500 lbs. Arranged for wet grinding if desired, also for motor drive.

La Salle Tool Company

La Salle, Illinois, U. S. A.

Bodine Portable Electric Tool Grinder

Cuts Costs—Insures Sharp Tools



A specialized machine for one purpose. Insures sharper tools than any general purpose grinder.

Instead of one centrally located grinder, some plants have a "Bodine" in every department, saving time and eliminating every excuse for dull tools.

THE "BODINE" is as near mechanical perfection as is humanly possible. Equipped with Norma precision ball bearings, heavy wheel guards, tool rests adjustable to any position, an ideal oiling system, etc., etc. And the price is reasonable.

Full particulars will interest you; may we send them?

The Bodine Electric Company
2256 West Ohio St., Chicago, Ill.

DUWELL Motor Driven Bench Grinder Complete As Shown. \$45



The last word in **durability**—it stands the gaff.
And tools ground by the Duwell are **ground right**.

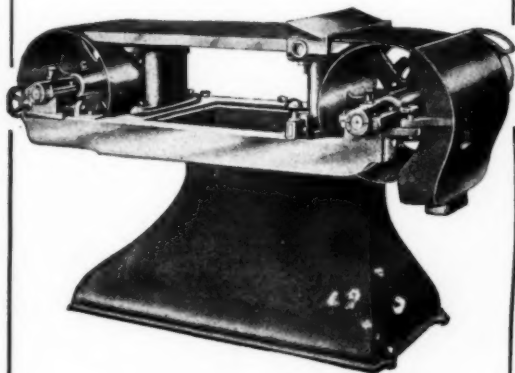
A high grade, powerful grinder, but still compact and portable. Motor **GEARED** to shaft; Bunting phosphor bronze bearings, 5" wheels, carbon steel shaft, universal dust-proof motor. Can furnish special equipment.

MANUFACTURED BY
J. A. FINLEY CO., GRINDER DIVISION
117 Brighton Ave., Allston, Mass.

PEERLESS SURFACING MACHINES

Will reduce grinding and finishing costs
and give you better work.

Can be substituted for many expensive
milling machine and planer operations.



Made also in vertical and bench models.

Send for large folder

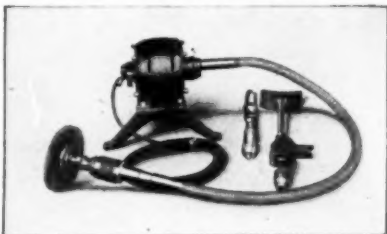
PEERLESS SURFACING MACHINE CO., Inc.

TROY, N. Y.

In Canada: A. R. WILLIAMS MACHINERY CO., Toronto

The Whirlwind Buffer and Grinder

Will cut the cost on any unhandy grinding or polishing job

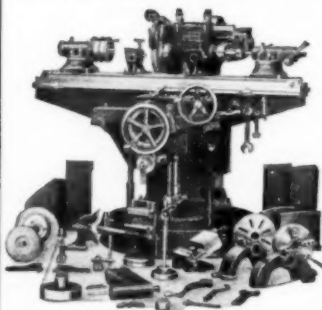


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Stow Flexible Shaft Co., 3454 Ludlow St., Philadelphia, Pa.

The Best Since 1876

A Truly Universal Grinder

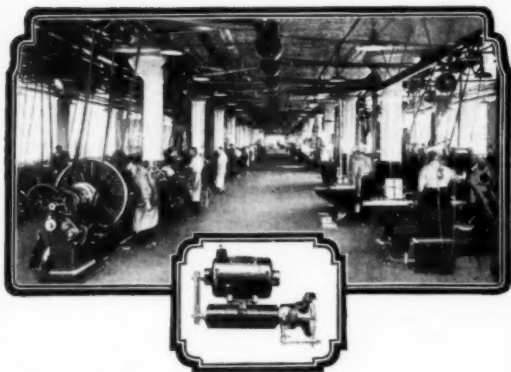


Thompson
10"x36"

It does practically every kind of grinding accurately, quickly and economically—plain, surface, edge, die, cutter and internal.

Write for Bulletin

Manufactured By
THE THOMPSON GRINDER CO., - Springfield, Ohio



Where Standards Are High You'll Find Dumore Grinders

IN CADILLAC'S tool room—where accuracy is law and close limits a creed—Dumore No. 3 grinders are rendering consistent, satisfying service. That our grinders are capable of meeting standards so exacting—that they are preferred by manufacturers so able, are facts of which we are justly proud.

If you make jigs, dies, gages and other hardened tools, you—like Cadillac—can use Dumore grinders to advantage. Six distinct styles, each with individual speed ranges, provide a grinder with the correct cutting speed for any grinding need. Dynamically balanced armatures and selected ball bearings in Dumore grinder motors, eliminate vibration. Grinding limits as close as .0001 are easily maintained with a Dumore—without taper, bell-mouth or chatter marks. All Dumore grinders operate on either alternating or direct current. Being portable they are easily carried to any job, eliminating the necessity of taking the work to the grinder.

Our new catalog will be sent promptly on request. This handy book is sure to contain a hint or two which can be profitably used by you. Send for it today.

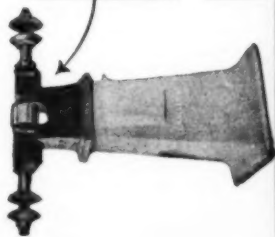
Wisconsin Electric Co., 43 Sixteenth St., Racine, Wis.

DUMORE HIGH SPEED GRINDERS

CHALLENGE GRINDERS

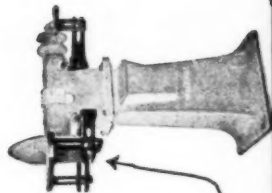
There is Nothing Like Them

10



Note that this is a set-up for polishing, and is convertible into each of the other five set-ups by merely bolting to the head the attachments shown in black, all of which fit either side. Belt or motor drive, and for bench or floor. Five sizes, ball or babbitt bearings.

That this disc grinding attachment has a table that drops level or slanting to any angle.



That these wheel guards are forged from chan-

that drops level obtaining to any angle.

That these wheel guards are forged from channel steel, have wired glass eye-protectors, and fit close to the wheel however much worn.

That this surfacing attachment is for jobs better done under the wheel.

That this water attachment has hinged drop reservoir, so that when at rest, the wheel becomes dry automatically and so remains in balance

That this surfacing attachment is for jobs better done on top of the wheel.

Thus in a Challenge you get what you want when you want it—any set-up, at any time.

Catalog to any address

CHALLENGE MACHINE CO.
5116 Springfield Ave. PHILADELPHIA, PA.



Type C-1 Tool

**More
Economical
than a
Diamond**

You will produce work at
infinitely less expense by
using the

“Precision” Roughing and Semi-Finishing Wheel Truing Tool

Not a substitute for the diamond, but built on
an entirely different principle which is an im-
provement over the diamond in that it pro-
duces work equal or better than that of the
diamond and at a greatly reduced cost.

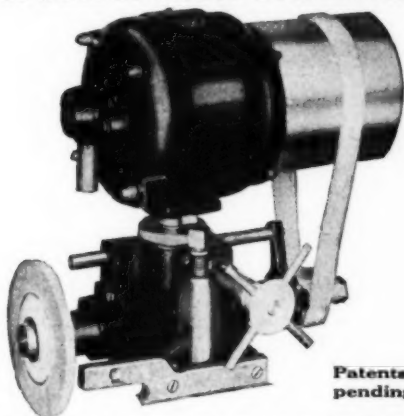
**It will pay you to put Precision
Wheel Truing Tools to a test.**

Ask for descriptive booklet

**The Precision Truing Machine & Tool Co.
CINCINNATI**

The New Gollwitzer Portable Electric Grinder

A Tool of Wider Usefulness



Instead of being in line with grinding shaft, the **MOTOR** is placed above, out of the way. This prevents tailstock interference on the lathe when grinding work of small diameter. It also permits the grinding of work of a diameter up to the lathe's maximum capacity, as there is no overhanging motor to take up the cross-slide travel. Also grinds lathe centers, short tapers, etc., without compound rest.

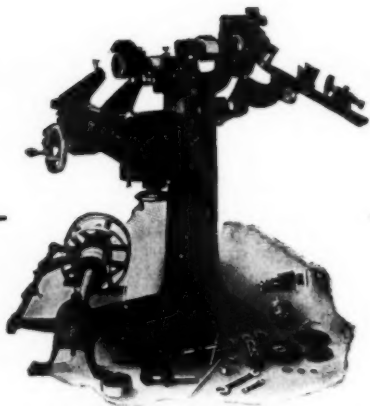
A valuable feature is the following:—A diamond holder is provided, and by using the longitudinal traverse, the wheel can be dressed smooth and true in minimum time.

Carefully built by tool makers. Spindles are an inch in diameter, are heat treated, and are supported by four Norma precision bearings. For use on lathe, planer, shaper, milling machine or bench.

*Glad to tell you about this **BETTER** Portable Grinder*

GOLLWITZER & HOWE,

4711 W. Lake St.,
CHICAGO, ILL.



Grand Rapids No. 2 Universal Cutter, Tool and Drill Grinder

A grinder that really is universal. One man can grind drills and another grind cutters and tools without interfering with each other.

As a drill grinder it includes all the good features of our single-purpose machines. It gives equal lengths and correct angles to the cutting lips, with proper clearance, etc., thus insuring maximum drilling capacity.

And it grinds with the highest efficiency any type of cutter, reamer, etc., that any grinder will handle with its standard equipment, within its capacity as to size.

Write for our handsome Grinder Book, which illustrates and describes a dozen separate operations, as well as the full line of Grand Rapids Drill, Cutter, Tool and Tap Grinders.

Gallmeyer & Livingston Co.
342 Straight Ave., S. W., Grand Rapids, Mich.

"HISEY" Grinding Machines

Ball Bearing——Motor Driven

Made in 7 Sizes— $\frac{1}{4}$ to 10 H. P. Capacity



1 H. P. Bench Grinder

$\frac{1}{2}$ H. P. and 1 H. P. sizes are particularly adapted to grinding knives and tools, as well as any other grinding work within their capacity.

They can be operated from any incandescent lamp socket. (No belts required.)

Bearings—SKF throughout. Highest motor efficiency made possible by practical bearing mounting.

Spindles—are of one piece construction and accurately ground.

Flange Washers—are of liberal size and balanced.

Arbor Diameters—are of standard dimensions as recommended by A. S. M. E.

Wheel Guards—are made of Steel and adjustable.

Motor Bases—are extra large and proportionately as heavy.

Water Pot and Tool Tray—are separate and detachable.



1 H. P. Floor Grinder

Grinding Rests—adjustable in any direction.



Write for Bulletin 1305-H

Hisey-Wolf Machine Co.

Cincinnati, Ohio

Agencies in All Principal Cities

Compact—Sensitive—Accurate—Durable
The "ATLAS JUNIOR" INDICATOR

Reads over a range of 0.055"—at a glance. Dial may be set at zero after adjusting to work. Contact point can be locked in position for inspecting. Keep it in your pocket and use it anywhere. Details?

PRICE \$7.50



Sold by Dealers or Direct

WALLACE BROS.
 160 N. Wells St., Dept. B.B. CHICAGO, ILL.

FEDERAL
DIAL COMPARATOR

DESIGNED FOR

The rapid checking of parts to close limits by unskilled labor.

Furnished with Indicators graduated .001"—.0005"—.0001".

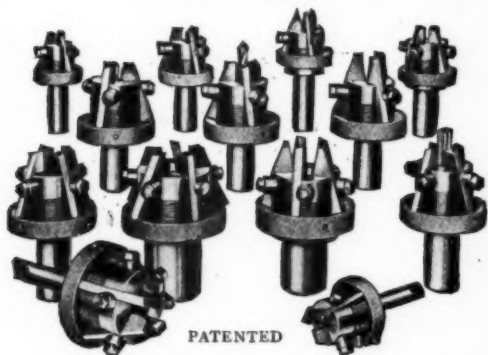
Does what an Amplifying Machine will do and costs less than half as much.

Send for our complete catalog of Dial Indicators, Cylinder Gauges, Comparators, Thickness Gauges, Piston Gauges, Rubber Gauges, Piston Pin Gauges, Fabric Gauges, Paper Gauges, Wire Gauges, Piston Ring Gauges, Thread Lead Gauges.



Federal Products Corporation
 Elbow & Chestnut Sts., Providence, R. I.

Save the Buying Of Many New Tools



Genesee Adjustable Hollow Mills

THEIR GREAT ECONOMY is apparent when you consider that the blades are adjustable, are renewable at nominal cost, and that one set outlasts three to five solid tools. They quickly adjust to the 1000th of an inch, and they are built to keep machines keyed up to their capacity output.

THEY ARE IDEAL TOOLS for the finishing of forgings, castings, etc. Genesees can be fitted with drills and reamers, have formed blades, etc. Blades can be ground any angle to point work and turn short tapers. Unlike solid tools they never clog up with chips, change size, or lose their efficiency.

*"Shop Costs" often give you cause for worry.
Let us help you reduce them, the same
as we have done for hundreds of others*

Genesee Manufacturing Co., Inc.
Rochester, N. Y., U. S. A.

Manufacturers of Genesee Rapid Production Tools

POWELL BLOW GUN

Designed to dispense air with utmost economy.
Used for cleaning machines, machine tools and work benches.



Made with different tips for special requirements.
Circular on request.

The Wm. Powell Co.
2525 Spring Grove Ave., Cincinnati, O.

The Practical Steel Treater

For
"THE MAN AT THE FIRE"

By W. R. Bennett



The author's many years' experience as a Practical Steel Treater, coupled with his faculty for presenting in a comprehensive manner, the methods to which he attributes his success, makes this book worthy of a place in any factory library, or in the pocket of a steel treater as well.

**Bound in leather;
\$2.00 Post Paid.**

W. R. BENNETT, 17 Elm St., Hartford, Conn.

APEX Cushioned Self Opening Die Heads

Save The Chasers

All Parts Hardened and Interchangeable



Guaranteed to cut
threads accurately

Comparator Inspection given
all chasers

APEX Products

Trouble Eliminators
Always Reliable
All Tools Guaranteed

*Try one on your toughest job
Write for Circular*



Pat. Pend.
Quick Change
Drill Chuck



Patented
Safety
Friction
Tap Holder

The Apex Machine Co.
Phone East 3744 Dayton, Ohio



Improved
Taper Shank
Drill Collet



Patented
Screwless
Universal Joint



APEX Safety
Automatic Re-
leasing Stud
Holders fit
APEX Friction
Tap Holders



Taps Held in
Position by
Pins and
Notches

Tap Collets



LOOK—

0 to 1/2" Cap.

\$95.00

(Portable)

Motor Driven,
Ball Thrust Bearings,
Bronze Bushed,
Ring Oiling,
Sensitive and Accurate.

Just the machine for
Tool Room, Radio,
or production work.

*Write for circular and
full information*

Winterhoff Tool & Machine Co., Elkhart, Ind.



Multiple Spindle Drill Heads

Made regularly with 2 to
6 adjustable spindles
to drill in any pattern.
Special heads to order.

Also made with fixed
spindles of any practica-
ble type to fit your work.

They drill two or more
holes with the same
speeds and feeds you
use for drilling one.

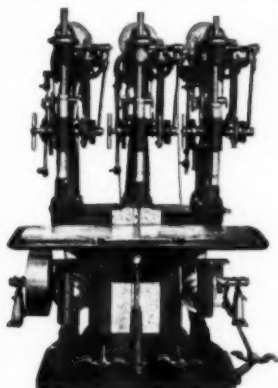
May we help you?

The United States Drill Head Co.

1952 W. Sixth St.,

Cincinnati, Ohio

The Rockford Automatic GANG DRILLING MACHINE



**Superior
Drilling
Equipment**

*“—the
utmost value
for your
money.”*

It's a combination of the best materials and high class workmanship, consequently the operator has no difficulty in obtaining and maintaining the greatest accuracy.

Automatic Return—When each spindle has completed its operation it automatically returns to its highest position, where it remains until the starting lever is tripped, when it immediately drops to position above the work.

By removal of the stop pin in the cam, the spindle will immediately return to lowest position above work, and when tripped by automatic stop, will return to highest position and immediately drop again to work, repeating the movement automatically until the power is shut off. The spindle can be pulled ahead of the feed while in operation, a great advantage in drilling through a cored piece, piping or similar work.

Built with 2, 3, 4 and 6 Spindles—Box Column Type

Ask for Circular. Glad to answer questions

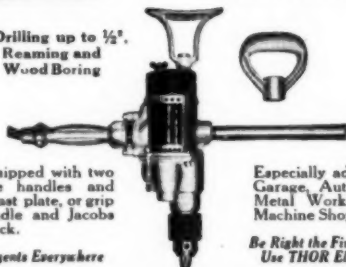
Rockford Drilling Machine Co.
Rockford, Illinois

Thor

Portable Electric Drill

Size UHB

For Drilling up to $\frac{1}{2}$ "
Reaming and
Wood Boring



Equipped with two
side handles and
breast plate, or grip
handle and Jacobs
chuck.

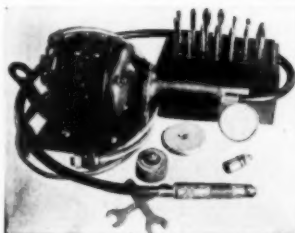
Especially adapted to
Garage, Automobile,
Metal Working and
Machine Shop use.

Agents Everywhere

*Be Right the First Time—
Use THOR Electric*

Independent Pneumatic Tool Co.
600 West Jackson Blvd., CHICAGO, ILL.

The Pattern Maker's Pal



Consists of—
 $\frac{1}{4}$ h. p. Westinghouse
motor
No. 5x4' shaft
No. 5x4' sheath
Can of grease
No. 5 handpiece with
two wrenches
Super service drop
cord and switch
14 Burs in block
Grinding spindle
3" Grinding wheel
Sanding drum

A complete portable outfit in a neat wooden block and cover.
Highest quality and workmanship. Special machinery enables
us to make P. M. P. at rock-bottom cost, in which users share.

The Hergi Manufacturing Co.
250 Fifth St., Bridgeport, Conn.



(POWER—AND MORE POWER)

THE PETERSEN

1/2" Guaranteed Electric Drill "Sure does"
have plenty of power

PRICE **\$50** 110 Volt

And the *1/4"* size is just as powerful in proportion

PRICE **\$25** 110 Volt

DEMAND A DEMONSTRATION

*Write for miniature catalog and name of
jobber handling our Line in your locality.*

A. H. Petersen Mfg. Co., 1620-22 Franey St., Milwaukee, Wis.

SNYDER

"G & A" Stud Driver

For the man who appreciates doubling his production without increasing labor costs

Releases Instantly

This tool displaces wasteful methods of driving studs. It drives the stud as tight as specifications require. The slightest back turn and the grip on the threads is released instantly.

Made of high grade alloy steel, assuring service and durability. Either hand type, taper, square or hexagon shanks.

Snyder Mfg. Co.

850 Lafayette Boulevard, W.

DETROIT, MICH.

Agents Wanted



Substantial Sensitive Drills

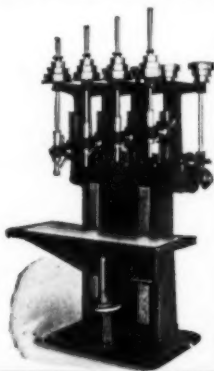
Overhang 7"

Capacity 1/2"-5/8"

Note width of table bearings and large base.

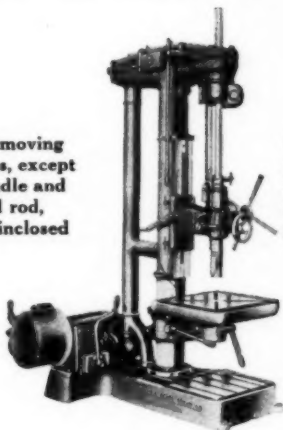
FRANCIS REED CO.

43 Hammond St.,
WORCESTER, MASS.



Aurora Ball Bearing
New 28" SUPER-Drill

**All moving
parts, except
spindle and
feed rod,
are inclosed**



**16 spindle
speeds and
six feeds
without stop-
ping machine**

We have spared no pains to incorporate in this Super-Drill the best practices of advanced mechanics—not talking points, but working points, for practical shop results.

Some of its features are—built-in construction, to protect all vital points from foreign matter and the operator against possible injury; ball bearing throughout except in the quill; helical spur gears made from nickel alloy steel with 20-deg. stub teeth; bearings and gears running in oil, with glass gages; 16 spindle speeds and six feeds without stopping machine; all controls conveniently located in front, etc., etc. Friction Tapping Attachment if desired. And the price is right, too, because of a modern shop organization and an overhead that is lower than usual.

May we post you—now—on this Super-Drill?

The Aurora Tool Works
803 Exporting St., Aurora, Indiana, U. S. A.

Tapping at 4000 R.P.M.

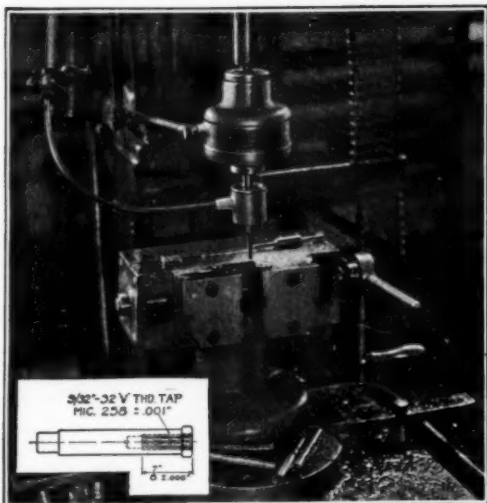
Production of 1000
pieces or 2000
No. 6-32 tapped
holes per hour is be-
ing obtained on this
brass Electric Con-
nector, running the
tap at 4000 R.P.M.



*Why not let us show
you how to get similar
production on your
small tapped holes?*

Leland-Gifford Co.
Worcester, Mass., U. S. A.





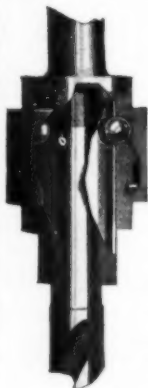
A typical JOHN CHUCK high production job.

Operation: Tap Exhaust Valve Lifter Pin
to depth of $\frac{7}{8}$ ".

The "John Way" increased production to
266 pieces per hour and in addition the same
set of jaws was used for 15 other jobs.

Write for full information.

BARBER-COLMAN COMPANY
ROCKFORD, ILL., U. S. A.



"Titan" Positive Drive

Quick
Change

Drill Chuck

Simply strike the end of drill, and out it comes. A one-armed man can do it.

Operates in any position—highly efficient on horizontal and inverted spindle machines.

The broken tang collet gives a positive drive to drills with broken tangs.

Made in sizes No. 0 to No. 5 for any taper shank drill, counterbore, reamer or similar tool. Saves time; saves drills; cuts costs.

It has other superior qualities

Write for descriptive price list

Titan Tool Company
Erie, Penna.

Barker Wrenchless Chuck

Developed and Manufactured by Thomas Elevator Co.

A complete Chucking Unit in itself. The Barker Wrenchless Chuck requires No Accessory Installations.



Made in two- and three-jaw styles, for every kind of turret lathe, automatic, and semi-automatic machine work.

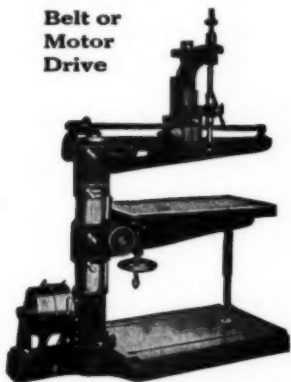
Thomas Elevator Co.

Chuck Division

31 So. Hoyne Ave., Chicago

The Taylor & Fenn Sensitive High-Speed Radial

**Belt or
Motor
Drive**



This great manufacturers' drill combines the speed of the sensitive with the flexibility of the radial, for practically all drilling requirements within its range. Drill the big pieces on the base and the small pieces on the table.

Tapping heads, power feed heads or hand lever feed heads may be used singly or in combination.

The drive is positive, through gears and silent chain. The spindle has three speeds and is bored for No. 2 Morse taper.

*A thorough investigation of this machine will repay you
We shall be glad to furnish complete data upon request*

The Taylor & Fenn Co.
Hartford, Conn., U. S. A.



Avey

**Ball-Bearing
Drilling
Machines**

**Tell us your problem in drilling holes.
If you are not getting absolute pre-
cision, there is an Avey machine ready
to do perfect work.....with greater
speed!!**

**The Avey Drilling Machine Co.
Cincinnati, Ohio**

**Avey Drills are
built in single spin-
dle or in multiples
up to 6. Bench and
column types.
Masterpieces, all!!**



NATCo

**Straight Shank
Adjustable
Holders**



**Economy
Convenience
Durability**

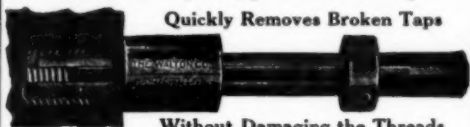
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**The
National Automatic Tool Co.
Richmond, Indiana**

Walton Patent Tap Extractor

Saves Time, Temper and Money

Quickly Removes Broken Taps



Without Damaging the Threads

NO NEED NOW to feel "put out" when a tap breaks. With a Walton handy you put the tap out—easily and safely. Just insert the fingers of the tool into the flutes of the broken end, and one or two twists of the wrist ends the trouble—could anything be simpler?

We make them in sizes from No. 8 to 1 1/4", and ship on 60 days' approval. Did you say "ship"?

THE WALTON CO., Hartford, Conn.



Mr. Superintendent! Here's the **No-Tap-Breakage Chuck**

—that is highly endorsed wherever used, particularly by leading automobile manufacturers, who give it extremely hard usage.

The Woodstock Improved

—automatically releases tap the instant it binds or strikes bottom. Utilizes up to 95% of strength of tap, with positive assurance that it will not break. Saves time and money. Made in five sizes.

Ask us to send you one on trial for use on that tap-breaking job

Peter Bros. Mfg. Co., 115 Railroad St., ALCONQUIN, ILL.

Better Tapping Machines?

Use the "R-S" Friction Driven



Vertical Tappers

Equipped throughout with SKF thrust bearings. All annular bearings of phosphor bronze. Spindle travels to and from the work. Floor type only. Sizes, $\frac{1}{4}$ " and $\frac{1}{2}$ ".

Horizontal Tappers

Efficient and time saving. Can be direct connected to motor. Sizes, $\frac{3}{16}$ ", $\frac{5}{16}$ " and $\frac{5}{8}$ ". Bench or floor type.

Radial Tappers

Reduce handling of heavy auto and machine tool parts. Topnotch manufacturing machines that increase output and profits. Capacity of $\frac{1}{2}$ " in steel.

The Friction Drive

is under perfect control and highly efficient. The instantaneous reversing mechanism prevents breakage of tools.

*Complete details are given in our
Tapping Machine Bulletin.
Send for it now—why wait?*

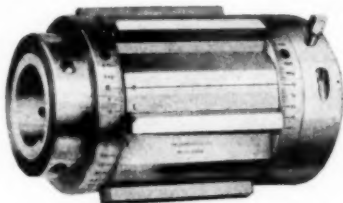
Rickert-Shafer Company

1110 Cherry Street,

ERIE, PENNA.

**Cut Boring Cost In Half with a
Lambert Expanding Bore-Reamer**

3" Tool Expands to 4"



20" Tool Expands 5"

PATENT PENDING

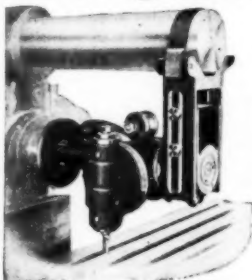
Sizes to suit your Requirements

Write for details and prices

LAMBERT TOOL CO.,

**E. 55th & Euclid Ave.,
CLEVELAND, OHIO**

**Universal
Milling Attachments**



Permit spindle
to operate at
any angle in
any plane.

*Several sizes.
and styles.*

Makers also of Tool Room
and Production Lathes

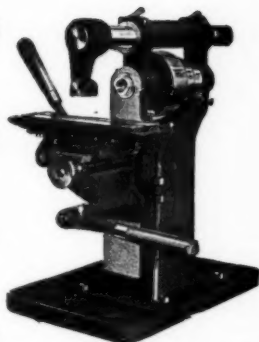
The Porter-Cable Machine Co.
Syracuse, N. Y.

Burke Millers

for ACCURACY
CONVENIENCE
ECONOMY

No. 3 Bench Type

Longitudinal Feed 8 inches.
Traverse Feed 3½ inches.
Vertical Feed 7½ inches.
Table Surface 3½x12 inches.
Price Bench Type \$155.
Price Column Type \$171.



On small milling operations where accuracy as well as production must be had are the places to use Burke Bench Milling Machines. Built in various sizes both power and hand feed at prices ranging from 100 to 220 dollars.

Burke 10-inch Sensitive Bench Drills

have been built for
20 years and they
are better than ever

BELT DRIVEN

No. 0 \$20
No. 1 \$24

MOTOR DRIVEN

No. 1 \$50 to \$55



The Burke Machine Tool Co.

297 East 16th Street,

Conneaut, Ohio

End Mill Economy



Make Straight Shank End Mills equal to Solid Taper Shank.

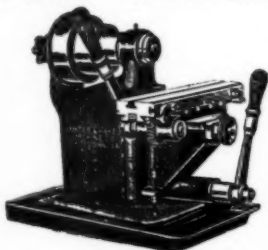
"Wear-Ever" Cutter Chucks make this possible; they "Center by the Shank" and "Drive by a Square."

All sizes of Chucks and End Mills in stock.

Try the combination and be convinced

SCULLY-JONES & COMPANY, 13th and Robey Sts.,
CHICAGO, ILLINOIS
TOOL DIVISION

Just The Machine



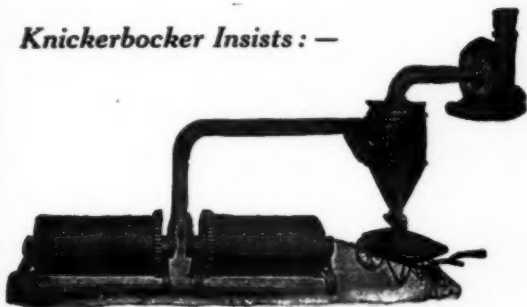
for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

THE CARTER & HAKES MACHINE CO., West Winsted,
Conn., U. S. A.

NEW ENGLAND AGENTS—Hill, Clarke & Co., Boston
NEW YORK AGENTS—Hardinge Sales Co., Grand Central Palace
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

Knickerbocker Insists : —



Making Good in Big Plants

Proves "Rarefied" Efficiency

As you know, Dust Collectors must make good or they are not re-ordered. We call your attention to the following sample list of users who re-ordered "Rarefieds"—

Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.....	34
Solvay Process Co.....	26
Western Electric Co., Chicago.....	23
Buick Motor Co., Flint, Mich.....	14
Willis-Overland Co., Toledo, Ohio.....	10
Oliver Chilled Plow Works, South Bend, Ind.....	9
Pittsburgh Plate Glass Co., Pittsburgh, Pa.....	9
Crane Co., Chicago.....	7
General Electric Co., Schenectady, N. Y.....	7



"Rarefieds" are efficient, use less power and reduce repairs. The dust is collected and automatically discharged before the air reaches the fan. There's no cleaning out by hand.

An interesting booklet tells the whole story—write for it

**The Knickerbocker Co.
Jackson, Mich.**



"Borgeson Universal Joints"

**Are you a user of Universal Joints?
If so!**

Remember well and bear in mind that a good Universal Joint is hard to find. But if you want one tried and true, you will want the "Borgeson" before you are through.

You will become not only a "Buyer" but a "Booster" for "Borgeson."

SIZES: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{2}$, $2\frac{3}{4}$.

Should you require Special Universal Joints, be sure to write for quotation.

*Complete description gladly
furnished upon request*

The Borgeson Mfg. Co., Inc.
Torrington, Conn.

Vanderbeek Giant Joints



**Efficient to
an angle of
45 degrees**

**Vanderbeek
Universal
Ball Joints**

Tested by Time

Used by U. S. Gov't. and Best Shops

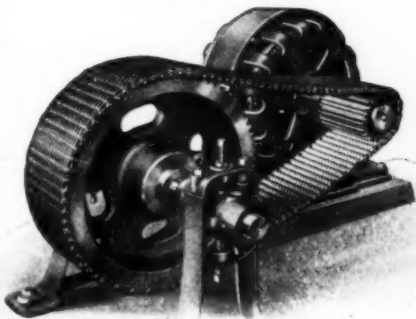
These joints are entirely enclosed against dirt, are self-oiling, have all wearing contacts of hardened steel of large diameters, and designed for the most severe strain.

American Tool Works, Inc.
Hartford, Conn.

"WHITNEY"

Long Service Chains

SILENT TYPE



There must be some places in your plant where you can obtain greater production by substituting chain drives for gears or belts. Remember, there is no slip to chains, and whatever movement there is in the driving shaft is delivered without loss to the driven shaft.

*Consult our Engineering Department.
It cost you nothing.*

THE WHITNEY MFG. CO., - HARTFORD, CONN.

NEW YORK
L. C. Biglow & Co., Inc.
243 W. 55th St.

BOSTON
George C. Steil
740 Commonwealth Ave.

PHILADELPHIA
R. J. Howison
624 Race St.

SEATTLE, A. H. Coates Co., 1115 E. Union St.

SAN FRANCISCO, A. H. Coates Co., 615 Howard St.

Steel Bearing Balls

Brass
and
Bronze
Balls



Steel
Burnishing
Balls

Ask for Price List 23-H

The Abbott Ball Company

Elmwood District, Hartford, Conn.

GRANT Noiseless Rotary RIVET SPINNER



**For Speed, Economy and for
Work of the Highest Quality**

Speed:—One rivet per second.

Economy:—Its rapid production makes it extremely economical.

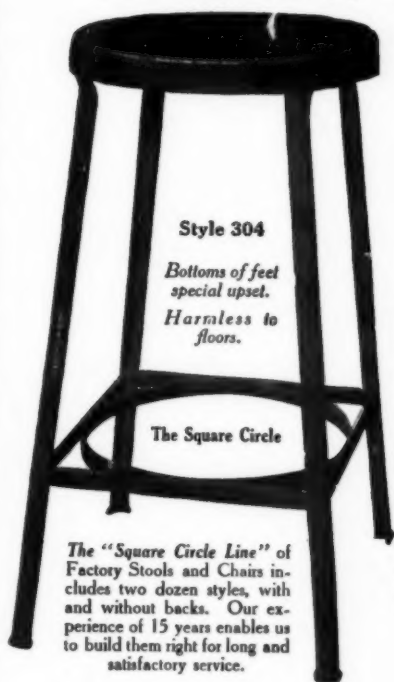
Quality:—The heads are perfectly formed and highly polished, without hammer or tool marks, and with whatever degree of tightness or looseness is desired.

*Write for Catalog, showing several styles
Also send samples of work for riveting*

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

ALL STEEL STOOL

13" Seat, with $\frac{1}{4}$ " Dish



Style 304

*Bottoms of feet
special upset.*

*Harmless to
floors.*

The Square Circle

*The "Square Circle Line" of
Factory Stools and Chairs in-
cludes two dozen styles, with
and without backs. Our ex-
perience of 15 years enables us
to build them right for long and
satisfactory service.*

Net Prices

Heights

18" to 24"

\$21.00

per dozen

26" to 32"

\$24.00

per dozen

f. o. b.

Kalamazoo

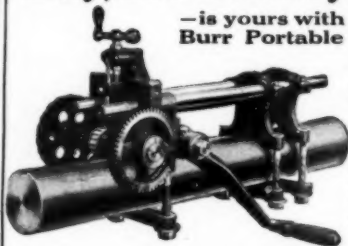
Metal Backs,
concave, roll-
ed edges, with
spring steel
posts — flexi-
ble — can be
furnished at
\$6.00 per
dozen addi-
tional

*Send us your order for Style 304 — you'll like it
And ask for our complete Catalog, with net prices*

Kalamazoo Steel Goods Company
408 East Ransom St., Kalamazoo, Mich.

Easy, Low Cost Keyseating

—is yours with the handy
Burr Portable Keyseater



No need now to dismanttle your shafts and machines. A "Burr" cuts accurate keyseats up to 12-in. long in shafting up to 5" diam. with no trouble or any resetting.

Over Nine Thousand in use today! Your choice of seven sizes. A single emergency job often pays for it. Write to

JOHN T. BURR & SON

422 Kent Ave., Brooklyn, N. Y.

A clutch experiment would result in your incorporating dependability into your product, in the form of



CONWAY
Clutches

THE CONWAY CLUTCH CO.

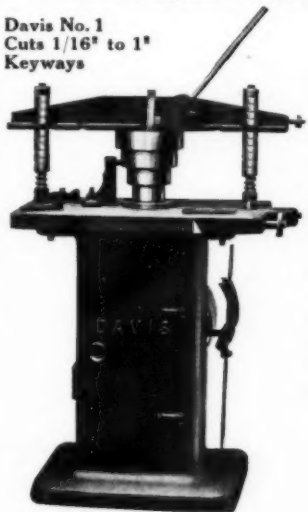
630 Burns St.,

CINCINNATI, O.

The Davis Keyseater

For Rapid Production

Davis No. 1
Cuts $1/16"$ to $1"$
Keyways



For cutting
keyways in
pulleys,
gear blanks,
bell cranks,
crank handles,
etc., etc.,
and for
slotting,
oil grooving
and work
of similar
character

Cutting Keyway in Cone Pulley

The main features of the Davis Keyseater are simplicity, ease of operation, rapid production and durability. Twenty years of satisfactory service in many plants. The folder gives samples of cutting time and much other valuable information. Made in two sizes. Can equip for motor drive.

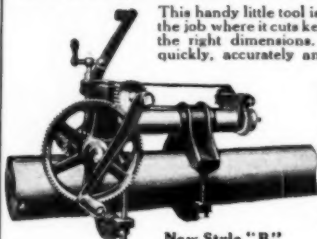
Write for complete illustrated description

Davis Keyseater Company

255½ Mill Street,

Rochester, N. Y., U. S. A.

A Strong Portable Key-Way Cutter



New Style "B"

Write for prices and literature illustrating and describing several models, including motor driven machines.

This handy little tool is easily taken right to the job where it cuts key-ways of just exactly the right dimensions. It does the work quickly, accurately and at minimum cost, saving labor and money. Just clamp the tool to the shaft and turn the crank.

Style "B" has six milling cutters and cuts keyways from $\frac{1}{4}$ " to 2" wide, in shafting 2" to 8" in diam. and 12" long without resetting.

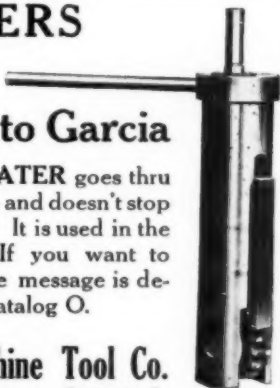
THE BUCHER-SMITH CO.
East Liverpool, Ohio

DELIVERS

THE

Message to Garcia

This **KEYSEATER** goes thru thick and thin and doesn't stop for anything. It is used in the drill press. If you want to know how the message is delivered, get Catalog O.



National Machine Tool Co.

2268 Spring Grove Ave.,

Cincinnati, O.

In Three Minutes—

A Catlin Cuts a Keyseat 6"x1"x7/16"

Many other time-saving examples could be cited to show what is being done with this rapid keyseater in the run of an ordinary day's work.



*Favor us with your inquiry.
We shall be glad to mail the
interesting folder and answer
questions.*

Simplicity is the keynote of all Catlins—they contain less than half the number of parts of other keyseaters. And ordinary help soon becomes expert with them.

Catlins have the crank motion, which is much easier on the cutter than the rack and pinion drive. On some classes of work it is possible to keyseat piece after piece without clamping down the work or stopping the machine.

The Picture shows the No. 1 Catlin, belt driven, with three-step cone pulley. Our other sizes, for belt or motor drive, cover practically all keyseating requirements.

Chattanooga Machinery Company

2401 Bennett Ave., Chattanooga, Tenn.

Whitney Straightening and Balancing Machine



Ball Bearing

It is not necessary to use any center to straighten a shaft. Just revolve it freely on the ball bearing rollers, find the crooked portion, and apply pressure with ball bearing screw. It is fully twice as fast as any similar machine made.

For balancing, move straightening head to one end, and use raising blocks to get required clearance.

Description and price?

Whitney Metal Tool Co.

95 Forbes Street,

Rockford, Ill.



Threading Tool



Right Hand Off-Set Side Tool



Right Hand Turning Tool

ARMSTRONG Tool Holders

They Save—

High speed steel, 90%

Grinding, ----- 70%

Forging, ----- 100%

Over 100 tools for
Lathe, Planer, Shaper,
Slotter, etc.

Get the free Catalog



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Magazine-Fed Screw Driving

**Screws are Automatically Magazined
And Automatically Driven**

**Dump a gross or
more of Screws
here**

Drives machine screws,
wood screws, short screws,
screws with short bodies
and large heads, stove
bolts, hex. head or square
head bolts, or most any-
thing that can be maga-
zined.



Screws delivered
to and driven
from this point

REYNOLDS MAGAZINE-FED machines drive screws with mechanical precision, at a reduction of 65 to 85 per cent in cost.

THEY ARE NOT an experiment. Many of the best-known concerns in the country are using from one to thirty of them. Some say they pay for themselves three or four times every year. If once installed in your shop you'd never be without them.

TELL US THE DIMENSIONS over all of your work and the length and gauge of the screws used, and let's figure together a little. No obligation to buy, of course.

The Reynolds Machine Company
Dept. H. H.,
Massillon, Ohio

Balancing Ways

Anderson Improved are Always Ready



Made in six sizes for balancing anything that turns on a shaft, up to 24,000 lbs.—pulleys, gin brushes, turbine rotors, crank shafts, polishing wheels, fly wheels, etc.; also for testing straightness of shafts, crank shafts, etc. No centers required; no leveling. Always ready and accurate; very sensitive.

"Swing"	20"	40"	60"	72"	96"	72"
Greatest distance bet. standards	20"	30"	30"	66"	88"	20"
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight	45	90	150	350	650	
Code	Bend	End	Dis	Bib	Ben	

Any of above can be furnished with longer shafts

Anderson Bros. Mfg. Co.

1915 Kishwaukee St., Rockford, Ill.

For Sure Balance--

an absolutely level and solid "Way" is necessary

Bowsher "Balancing Ways"



are brought to an absolute *level* in ten seconds. No revolving parts.

The edges or "knives" upon which the work is tested are ground *true*, and are mounted upon the planed "ways" of a heavy bed or frame.

Standards adjustable to suit length of arbor.

Three sizes for floor—one for bench use

Send for Catalog "F"

The N. P. Bowsher Co., South Bend, Ind.

Out of Bunting's Stock List



There are 268 different sizes of Bunting "Ready Made" Bushing Bearings. All are completely machined and finished. Approximately three millions of them are always in stock. There is no longer any need to carry heavy inventories of bronze bushings or to have them specially made. Bunting's stock numbers specified on the blue prints will solve the bushing problem for any machinery builder, service man, or user.

Machinery Manufacturers—Write for present prices and Bunting's Stock Card W showing dimensions of the 268 sizes of "Ready Made" Bushing Bearings.

Special Sizes—The capacity of this plant for the production of special sizes, designs and alloys is practically unlimited. Send in your blue prints.

Mill Supply Jobbers—Let us tell you the advantages of stocking and selling bars of genuine Bunting Phosphor Bronze. Write for Cored and Solid Bar Stock List No. 7.

*Now let's make every machine happy with
some Bunting Bushings — BABY BUNTING*

THE BUNTING BRASS & BRONZE COMPANY TOLEDO, OHIO

Branches and Warehouses at

NEW YORK
245 West 54th St.
Circle 0844

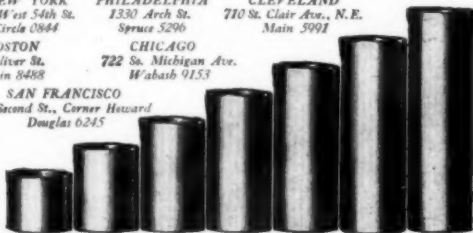
PHILADELPHIA
1330 Arch St.
Spruce 5296

CLEVELAND
710 St. Clair Ave., N.E.
Main 5991

BOSTON
30 Oliver St.
Main 8488

CHICAGO
722 So. Michigan Ave.
Wabash 9153

SAN FRANCISCO
198 Second St., Corner Howard
Douglas 6245



BUNTING BUSHING BEARINGS



Nos. 1, 2 & 5

When All Is Said

and done, you cannot beat our line of tools for cutting sheet, bar or round rods in iron or mild steels.

You can use our line of

Hercules' Shears and Rod Cutters

For cutting card, straw and fibre boards, brass and copper, gold and silver sheets, and hard rubber compositions.

Catalog No. 2 on request.

W. C. & F. C. TUCKER

HARTFORD, CONN.



Plain Shears Nos. 3 & 4



Style "A"



The Hinge



Style "U"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

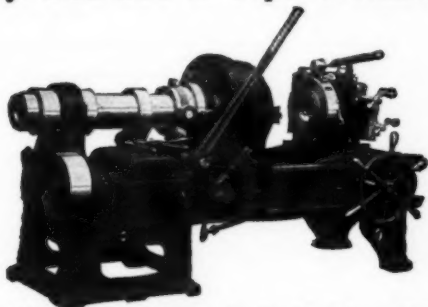
GITS BROS. MFG. CO

1940 SO. KILBOURN AVE., CHICAGO



Style "H"

Equally Good for Big Runs or Any Odd Job of Pipe Threading



(No. 4 P. D. Q. C. Improved. Belt Drive. Cap. 1" to 4". All Gears are Covered.)

No Obligation—

in putting your pipe threading problems up to us. Helping to solve such problems has been our specialty for over 35 years, and in that time we have learned many valuable lessons which only experience can teach. These lessons we are ready to pass on to you gratis.

B & Ks are built in 17 styles and sizes, and they're the embodiment of speed, convenience and dependable accuracy. You can make instant adjustment to the 1000th of an inch without the use of tools. And there are other features which help to boost the daily output and push down production costs.

*We know B & Ks can save you money on
Pipe Threading—put our staff of experts to the test*

Bignall & Keeler Machine Works **Edwardsville, Illinois**

Sales Agents: Manning, Maxwell & Moore, New York, N. Y.
Chicago Philadelphia Boston St. Louis Pittsburgh Cleveland New Haven
Cincinnati Buffalo Syracuse Detroit Milwaukee San Francisco Seattle

COLUMBIA SHAPERS

SUPERIOR HEAVY DUTY

The base is flanged on the under side — stronger and stiffer.

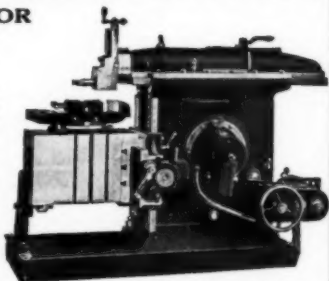
Our Shapers Merit Comparison.

SIX SIZES

16"–20"–24"

28"–32"–36"

Send for Bulletin No. 7 giving full description.

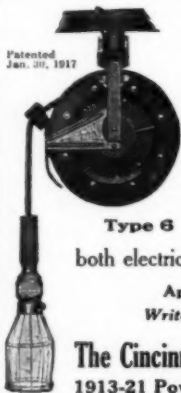


Cone, Single Pulley and Motor Drive

THE COLUMBIA MACHINE TOOL CO., HAMILTON, O.

Manning, Maxwell & Moore, Agents, New York

Patented
Jan. 30, 1917



Type 6

“Autex” Extension Reel

Rapidly finding a place in the largest industrial plants, machine shops, service stations, etc., in the U. S. Used for both electric lamp and power extensions.

Approved by Underwriters

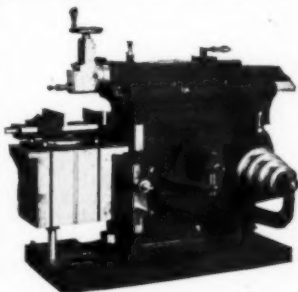
Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.

1913-21 Powers St.,

Cincinnati, Ohio

Barker B. G. Crank Shapers



16", 20" & 24"

Made to meet a demand for moderate priced shapers that are simple, durable and efficient.

Our successful experience of over 35 years in building machine tools is your guaranty of excellence.

Write for description and the moderate price

WM. BARKER & CO.

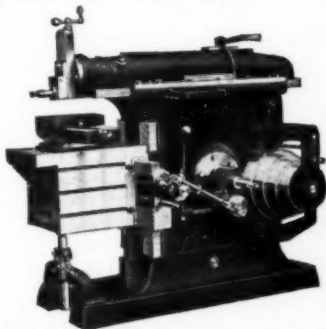
Manufacturer of Machine Tools,

COVINGTON, KY.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

32" Back
Geared
Crank, Single
Pulley
Drive.



The Smith & Mills Co., Cincinnati, O., U.S.A.

Our Hollow Bored Forgings And Steel Shafts

Are RIGHT in both QUALITY and PRICE



Piston Rods

Rams

Clutch Shafts

Steel Pipes

Lathe Spindles

Etc., Etc.

Send along your blueprints with a trial order; we'll both be pleased

American Hollow Boring Co.
Erie, Penna.



Special Machinery

**Contractors, Builders, and
Designers**

C. H. Cowdrey Machine Works

Established 1875

Fitchburg, Mass.



The RHODES 7" Horizontal Shaper and 3½" Vertical Slotter



Like a featherweight champion boxer, the "big ones" have nothing on the "Rhodes" except in size, and it moves faster. It is fully as accurate as the larger machines, it is more readily manipulated, and is much cheaper. The best "buy" for work within its capacity.

*Ask your dealer or write for
CATALOG H22*

The Rhodes Mfg. Company
984 Park Road, - Hartford, Conn.

SHAPERS—RHODES—SLOTTERS

E-Z THREAD DIAL E-Z

New device
lowers cost
of thread
cutting on
engine lathes.

For all
size lathes.

E-Z to
attach.

Send for
folder.



Eliminates
stopping or
reversing the
lathe.

Saves cost of
backing belt.

Saves power
to drive same.

E-Z to use.

Sent on fifteen
days' trial.

**JAMES M. COLVEN, 20 Wolfe Street,
Yonkers, N. Y.**

Hardinge Standardized Draw-in Chucks or Collets All Sizes, for All Makes of Lathes



Carried in Stock for Prompt Shipment

For Bench Lathes, Engine Lathes, Tool Room Lathes, Bench Type Milling Machines, also Collets for Screw Machines. Order reliable tools from a reliable source of supply—which means "HARDINGE."

*Better have our Price List on hand for reference
May we send it? And do you need anything now?*

HARDINGE BROS., Inc., 1770 Berneau Av. CHICAGO, ILL.

I Pay 500% Annual Dividends

You Can Prove It Yourself

*Built Since 1887
Better now than ever*



I am the

TOWSLEY TRUCK

I am made in all
styles and sizes
to meet every
requirement.

TAKE A PENCIL and do a little simple figuring. Make your own estimate of how much labor is saved each time a truck is used. Multiply this by the approximate number of times it is employed per day, and this, again, by the labor cost per hour, and you can easily estimate the saving for a month or a year.

EFFICIENCY ENGINEERS have figured this out with great care, and they say that the average truck pays for itself every two or three months, *earning about 500% a year.*

I, the Towsley Truck,

—am such a good truck, because my makers believe that anything which earns 500% a year deserves to be well made. They believe it is economy to build me the best they know how—not to sell at a price, but to last the longest, to give the best service, and to earn the largest dividends. And that is why I have been adopted in so many plants as their standard truck equipment.

*Write to my makers. Tell them your requirements.
Let them help you make money. They are the—*

John T. Towsley Mfg. Co.
1036 Woodrow St., Cincinnati, Ohio

SEBASTIAN—



18" Gold Seal
Heavy Duty
Dbl. B. G., Qk. Ch.,
Cone Head Lathe
\$850.

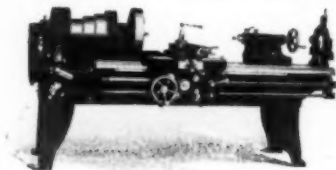
Remember this name when
you are in
the market
for high
quality,
medium
priced
Lathes of
the most
modern
design.

Builders of Lathes for 38 Years

Write for catalog

The Sebastian Lathe Company
1000 Culvert St., Cincinnati, O., U. S. A.

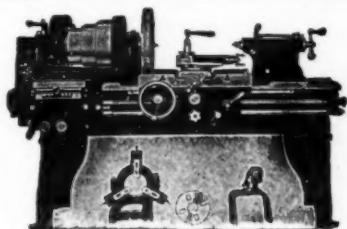
SIDNEY LATHES



Accuracy, strength, and a size for every requirement
Medium, Standard and Heavy Patterns.

Write for complete catalog

The Sidney Machine Tool Co.
Sidney, Ohio



The 18" Heavy Duty Quick Change Gear MUELLER Engine Lathe is a marvel for rigidity, ease of control, and durability. It is the kind of Lathe you need in your shop to meet present day competition.

Let us tell you all about it

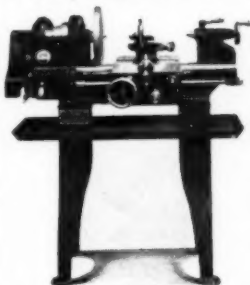
The Mueller Machine Tool Company

Radial Drills and Lathes

ESTABLISHED 1902

CINCINNATI, O.

Monarch Jr. Lathes



are the smallest members of the Monarch lathe family. Yet they are the "biggest little lathes" built.

The Monarch line of lathes includes all sizes and types from the little 9-inch Junior lathe to the big, massive 30-in. lathe. In this line there is a lathe to fill your requirements at the price you want to pay.

Send for Catalog

The Monarch Machine Tool Co.

206 Oak Street, Sidney, Ohio

The American Vertical Broaching and Assembling Press



A ruggedly built, highly efficient machine, with a capacity of six to eight tons pressure, at the low price of only

\$475

Maximum stroke, 18 in.; space between frame, 12 in.; floor space required for operation, only 4½ feet square.

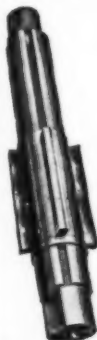
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**American Broach
and Machine Co.**

Ann Arbor,

Michigan

Nicholson Expanding Mandrels



ONE SET of only nine fits any hole from ½" to 7", round or square. They fit it in a moment, without calipering or guesswork. Figure the saving in time, labor and storage space. Wonderfully handy and economical in every way.

Nicholson Arbor Presses

Reduce by half the time required for pressing out arbors, punching, bending, broaching and similar work. There's a size to meet your needs.

*Write for booklet and 30-day trial offer
on either or both of these devices*

W. H. Nicholson & Co.

117 Oregon St., Wilkes-Barre, Pa.

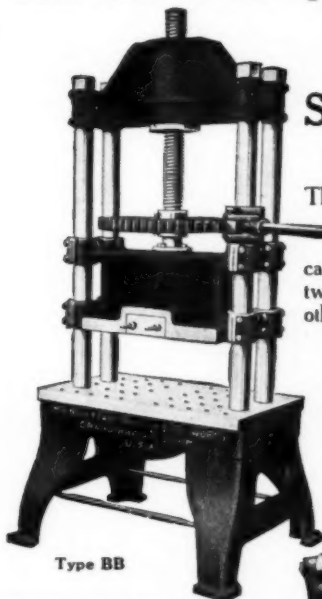
Tool Room Work Speeded Up—

With This

1-Man 4-Post

Screw Press

80-Ton Pressure



Type BB

This modern machine is so convenient that one man can fit dies quicker than two men can do it on other machines.

Gives perfect alignment between punch and die. The four sizes are rigid, sensitive, powerful. Table of Type BB is 20x36".

Surface Grinder

Powerful, and with ample rigidity for accurate work. Has non-vibrating wheel. Both feeds have graduated dial.

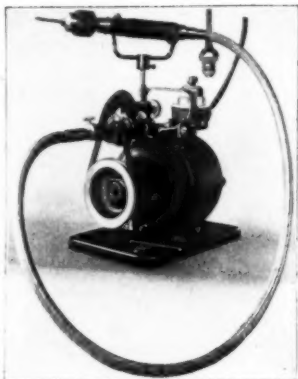
Details and prices for a postal

**JARECKI MACHINE
AND TOOL CO.**

Successor to Manhattan Machine & Tool Works
GRAND RAPIDS, MICHIGAN



Jacobs
and
Chucks



Drilling V

In many a shop it is a
 liable, serviceable porta
 production in either dri
 is found in the—

Strand Drilling

This is a portable mach
 countershaft drive thro
 special machinery and
 perfectly flexible to car
 for drilling, it is equip

*We invite you
 Full informat*

N. A. STRAND & CO.,

5001 N. Lin

*This advertisement is
 interests of good Drilling
 by the makers of the Ja*

Investigation and



Working With a Flexible Shaft

It is an economy and great convenience to have a reliable portable tool which can be relied upon for satisfactory work in either drilling, grinding or polishing. Such a combination is—

Drilling, Grinding and Polishing Machine

A machine of high efficiency, with a three-speed motor drive through a flexible shaft. The shaft itself is made with wire and is as tough and durable as solid steel, though able to carry the full load in a curved position. When used is equipped, of course, with the Jacobs Chuck.

*Invite your investigation of this handy machine
information will be cheerfully furnished by—*

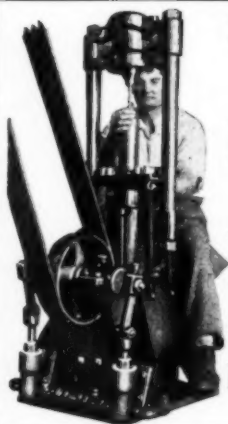
1 N. Lincoln Street

CHICAGO, ILL.

*It is published in the
Drilling Equipment
the Jacobs Chuck*

and Progress are Brothers





Broaching Presses

We make a
variety of presses for

Broaching

Any tons capacity
Any speed that may
be wanted

*Write for circulars and information
Tell us about your requirements*

(The man in the picture is broaching
2,500 bushings per day)

Lourie Mfg. Co.
Springfield, Ill.



Belt Driven

DUPONT Power Hammers

Belt or Motor Drive

For general forging and
tool dressing.

They embody a design and
workmanship that are un-
surpassed.

Send for Bulletin

United Hammer Co.
EVERETT, MASS.



Barnes Drills

8' to 50' Swing

State size you are interested in and we will gladly quote. This is our 20-inch Drill with wheel and lever feed. Can furnish self-feed and back also.

We have made over 22,000 of this size drill—is very popular and there is a reason—it's the best 20-inch drill made for the money.

We make this Adjustable Arbor Press

In three sizes

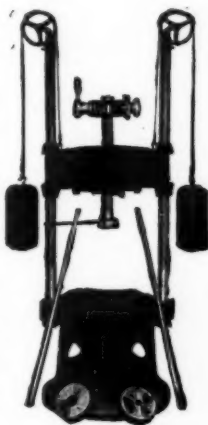
No. 1 size 12"x 24—\$100.00

No. 2 size 20 x 36— 175.00

No. 3 size 30 x 36— 200.00

* Means 12 inches between side screws.

Frankly, this is not a cheap Arbor Press, but is strongly made and most convenient to operate—just a lot better than others.



W. F. and John Barnes Co.
123 Ruby St., Rockford, Ill.

Safety and Speed

The Improved Wiesman Automatic Safety Guard sweeps the *entire* length of Bolster Plate or on *half* of downward stroke of Punch.

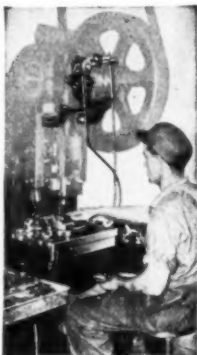
This means that *both* hands of operator are protected.

The Guard Arm returns *beyond* the center of ram on *half* of upward stroke. This allows the operator to feed *fast*, knowing that he is *safe* if the press *repeats*.

Attached to Press in One Hour
No Drilling Required

30 days' free trial

The Wiesman Co.
Beaver Bldg., Dayton, O.



SOMETHING NEW

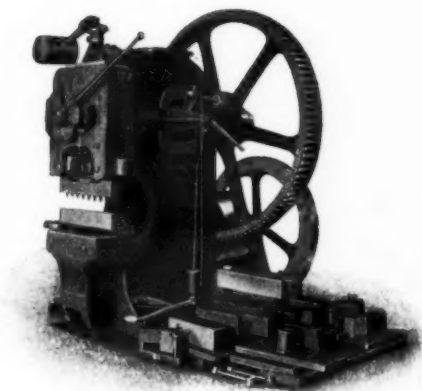


**Hand Power Presses, Shears, Notchers,
Punches and Dies, Etc.**

Write for Booklet

J.F. Kidder Mfg. Co., Burlington, Vt.

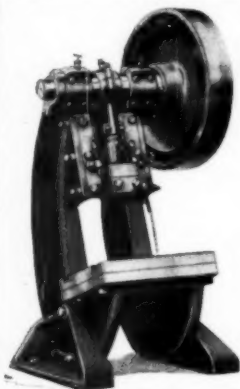
New Doty Punches and Shears



Punch and Shear equipped
with a number of gangs of
punches and dies for spe-
cial work.

Send for Catalog G

New Doty Manufacturing Co.
JANESVILLE, WISCONSIN



Trade **Verson** Mark

Punch Presses

For Accurate Work

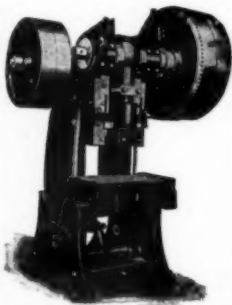
Ask your dealer to show you the "Verson" Line of Power Presses, or write direct for circulars.

**La Salle
Machine Works**

3013 S. La Salle St., Chicago, Ill.

Manufacturers of Power Presses, Angle Shears and Dies

A Quality Inclinable Press Backed by a Real Guarantee



A Loshbough-Jordan Press cannot be overloaded while operating within its rated speed. Any shaft or frame broken under these conditions and within year of purchase will be replaced gratis.

Many features for convenience and safety of operator; long, satisfactory service; quality and volume of output excellent.

*Let us tell you about them
—or better, let us send a
press on 30 days' trial.*

**Loshbough-Jordan
Tool & Machine Co.**
Elkhart, Ind.

Efficiency—

If it's a Nazel Air Hammer

the air is being used at the temperature which it attains in compression, therefore there are no heat losses—result: High Efficiency.

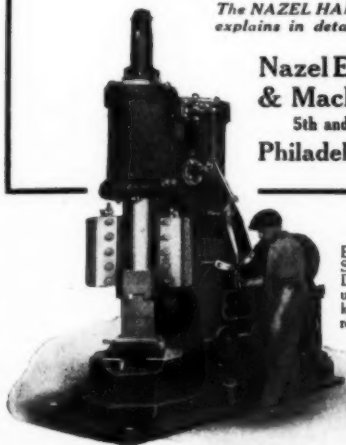
In the case of a hammer worked from an independent air supply, there is a very considerable loss due to the cooling of air before use. The best results therefore can only be obtained in a hammer by using the air while still hot from compression. A condition attained only in a Nazel.

*The NAZEL HAMMER BOOK
explains in detail. It's free*

Nazel Engineering & Machine Works

5th and Luzerne Sts.

Philadelphia, Penna.



Built in three types, Six Sizes, Belt or Motor Driven, with capacities up to 7" square for all kinds of machine, railroad and general forging

NAZEL HAMMERS require no storage tanks, independent compressors or piping.

T.H.L. Front Lever Bench Punch

Malleable iron body; working parts hardened. Steel shaft and plunger. Die cannot lose alignment with punch. All parts interchangeable. Built for hardest, toughest work.

PRICE \$50

Extra Punches, 20 cents each; extra dies, 30 cents.

Capacity $13/32"$ thru $1/4"$ steel, $11/32"$ thru $5/16"$. Punches up to $1\ 1/2"$. Weight, 70 lbs.

A good buy; can ship promptly

**T. H. LEWTHWAITE
MACHINE CO.**

(Est. 1890)

417 E. 31st St., NEW YORK



The Only Difference

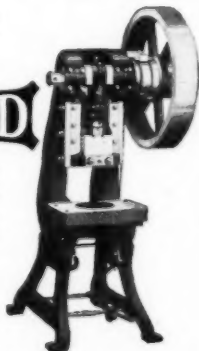
is not just price. The big thing is **service**. An investigation of the merits of

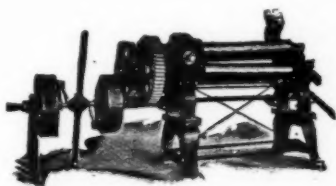
HIGH DUTY
ROCKFORD
PUNCH PRESSES

will give you a new idea of what you should get in punch press service. Definite, dependable reliability under all working conditions.

Write today for complete construction details.

Rockford Iron Works
ROCKFORD, ILL.





BELOIT

INITIAL TYPE

Sheet & Plate Bending Rolls

The Beloit Initial, or side bending, type roll has been designed to meet the demand for a strong, efficient, quick acting roll for use where the heavier Pyramid Type is not required. It is especially adaptable for use in shops handling sheet metal and for the lighter class of work in Boiler Shops, such as stacks, breeching small tanks, and the like.

The upper roll is geared to the adjustable lower roll thus pinching the plate, while the idle roll, which is also adjustable, does the bending. The outer housing is hinged and the upper roll is raised by throwing a cam lever, thus permitting the removal of sheets bent to a full circle. All styles of these rolls are double back geared and require a minimum amount of power.

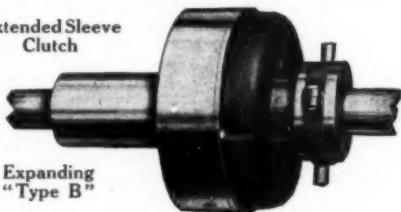
Built in twenty-six sizes with capacities up to 5/16" and from 14" to 96" between housings.

HENDLEY & WHITTEMORE CO.
100 S. State St., BELOIT, WIS.

Edgemont Friction Clutches

For All Transmission Purposes

Extended Sleeve
Clutch



Expanding
"Type B"

This clutch is designed for driving wood, steel or cast iron pulleys, gears, drums, rope sheaves, sprocket wheels, etc., on the sleeve. Edgemont Friction Clutches are made for all transmission purposes. Glad to advise on your needs—right now.

Edgemont Machine Co., Inc., DAYTON, OHIO

Smashes Costs of Filing—



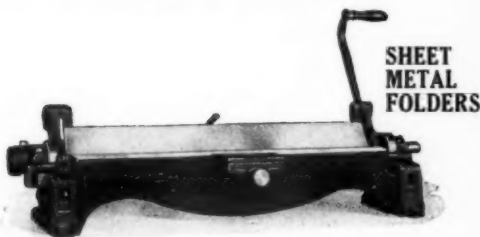
The "Hartford" Filing Machine

It does at least 10 times as much a day as the best bench hand you ever saw. It does not have to stop to rest its back or go to the fountain for a drink. It does rapid, accurate work all the time, and that puts money into your pocket. Made in Bench and Floor types.

A Dependable Cost-Reducer—Write for Folder Today

The Robinson Tool Works, Inc.
Waterbury, Conn.

SHEET METAL WORKING MACHINES & TOOLS



For the Sheet Metal Shop

The Niagara line of bench machines and hand tools for working sheet metal is so complete that you can standardize the entire equipment of your shop, making sure that every operation is done in the most efficient manner.

Among the Niagara machines for sheet metal working are the following:

Folders	Beaders	Bench Shears
Brakes	Groovers	Hand Tools
Burr Machines	Seamers	Squaring Shears
Wiring Machines	Forming Rolls	Lever Punches
Turners	Stakes	Lever Shears
Crimpers	Snips	

All these and many more are shown in our Handy Reference Catalog No. 56—send for free copy.

NIAGARA MACHINE & TOOL WORKS
ESTABLISHED 1879

BUFFALO, N. Y.

U. S. A.

NIAGARA

Saves Time and Material

Cuts Hardened Steel Rods or Bars, Reamers,
Taps, Copper and Brass Tubing, Aluminum,
Etc., Quickly, Smoothly and Without Waste

Peter Bros. Ball Bearing Abrasive Cutter

—is a big economy in the tool room or wherever such material must be cut.
Has a rapid, thin, clean cut. Doesn't draw the
temper, saves grinding, saves time and much valu-
able material. Soon earns its cost.

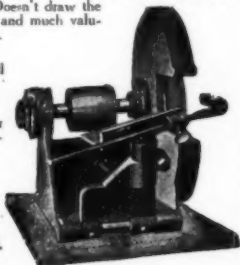
8" Size \$22.50, with C. S.
Splendid for tool room. Cuts all
high-speed steel up to $\frac{3}{8}$ " square.

12" Size \$60, with C. S.
Cuts up to $2\frac{1}{4}$ " diameter, round or
square, at any angle up to 45 de-
grees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



"QUICKWORK"

(TRADE-MARK REGISTERED THROUGHOUT THE WORLD)

ROTARY SHEARS

MADE IN VARIOUS SIZES AND STYLES

For cutting all gauges of sheet and plate up to $1\frac{1}{4}$ inches thick used in
building Ships, Boilers, Cars, Tanks and General Plate and Sheet Metal
Work. Cut square or beveled edges in straight or irregular shapes, also
cut rings and discs, and cut openings without starting in from side of sheet.
Leaves the metal flatter than any other Rotary or Short Straight-Bladed
Shear. Cuts a clean edge that requires no finishing.

Joggling and flanging rolls can be used interchangeably with the cutters.

**Do Long Straight Cutting Faster Than Any
Other Shear of Any Kind**

One "QUICKWORK" does the work of a number of old style machines
Does it better and from two to ten times quicker

Eliminate Oxy-acetylene Cutting and Plate Planing

WRITE FOR CATALOG NO. 60

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

Cable Address: "QUICKWORK." All standard codes used.
New York Exhibit: Grand Central Palace.

Agent for British Isles: Oliver Machinery Co., Manchester, England.

To cut metal 50 to 100% faster means
that you also greatly cut costs



Peerless HIGH SPEED

—Heavy Duty Metal Cutting Saws reduce costs in more than one way. You obtain 50 to 100 per cent *more work* with the same number of machines, or you accomplish the *same amount of work*, with fewer machines. In the latter instance you save in investment, in attendance and in floor space.

One of the very valuable features of the "Peerless" is the balanced lift, which automatically raises the blade for the return stroke. This frees the teeth from strain and wear, prolongs the life of the blades, and saves power. Compared with other machines, the Peerless saves money at every stroke.

Complete Information Furnished on Request

Peerless Machine Company
1350 Clark Street, RACINE, WISCONSIN

J. & B. Filing and Sawing Machine

Reduces Working Time More Than Half

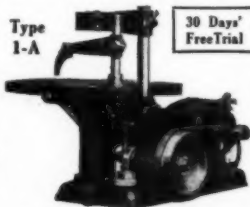
Uses standard files from 3" needle to a 12" flat or bastard.

Reciprocating Overarm and File-Holder provides for filing punches, etc., where file does not go through or past the work.

For tapered and crooked files an adjustment brings working side of file to an absolutely vertical position. Adjustable up and down to utilize entire file.

Saws 30% faster than other sawing machines. Takes any hack saw blade, or you can use up your broken blades.

Type
1-A



30 Days'
Free Trial

La Porte Machine & Tool Co., Inc.
La Porte, Indiana

Wanted—A Job



At heavy lifting and lugging. You pay for me only once, and I will hustle for you years and years without wages. For a comparatively small initial cost I will do the work of 6 to 10 men.

My name is "The Can Ton Portable Crane and Hoist," known in all parts of the country as "The Handiest Tool in the Shop."

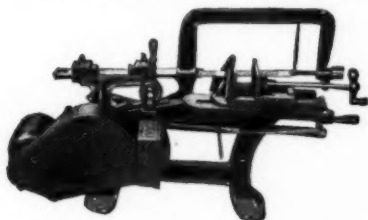
In case I appeal to you as a likely chap, just write my people for Booklet E8.

Thank you—I know we'll be friends from now on

Canton Foundry and Machine Co.
Canton, Ohio

New York Office: 203 East 15th Street, Second Floor

A GENERAL WORK
Motor Driven Hack Saw
Either Stationary or Portable



Marvel Draw-Cut Hack Saw No. 2

CAPACITY { 6"x6" on long stroke
 { 8"x8" on short stroke

Here is a saw that is proving very popular—a motor-driven, substantial, smooth-running, general-purpose Hack Saw of good capacity, that is sold **at a reasonable price.**

It is furnished either with motor for a high-power circuit as a stationary machine, or with motor for an electric light circuit so it may be moved anywhere in the plant, the cord attached to the nearest lamp socket, and it's ready for business.

Motor is connected to driving crankshaft by silent chain, sprockets and intermediate cut gears enclosed in cast iron housing and guard and run in oil.

We can also furnish the No. 1 Motor Driven Hack Saw, portable, for light circuit, capacity 4"x4". We make other Hack Saws, one of them entirely automatic, and the popular Marvel Metal Band Saw, all furnished either belt or motor drive; also the Marvel Punch, Shear and Bender. Tell us your requirements, and let us send you description and price of what you need.

Armstrong-Blum Mfg. Co.
341 N. Francisco Ave., CHICAGO, ILL.

Quick Work



If you want to do quick cutting of rods or flat stock, use one of these Metal Shears.

Write for leaflet No. H63 and prices

The W. W. Oliver Mfg. Co.
1495 Niagara St., Buffalo, N. Y.

Weigel Single-Wheel "Kwality Kaster"

Will not crush or break. Swivels on steel machined rollers. The best single caster on the market.

Double-Wheel "Trukaster"

Lasts three times as long as others. Easiest running, strongest, and most durable double-wheel caster made. Has heavy plates and axes.

Write for Price List

**THE HAMILTON
CASTER & MFG. CO.**
HAMILTON, OHIO



RACINE "JUNIOR"

**Portable—High Speed
Metal Cutting Machine**



This machine is a wonder in its class. Every shop needs this handy outfit. Can be moved easily and quickly to any location convenient to an electric light socket. So smooth in operation and so vibrationless that it need not be bolted to floor. The speedy Racine Junior performs with remarkable accuracy due to the exclusive patented features of construction. No other saw on the market of like size can approach it in speed, accuracy or economy of operation. You should add this highly developed machine to your equipment. It will quickly convert you to appreciation of the substantial savings possible through modern, scientific metal cutting. Normal capacity 0" to 4"—with possible adjustment for cutting larger sizes. Complete and detailed information will be sent you promptly on request. There is a Racine H. S. Metal Cutting Machine for every metal cutting requirement.

Use "Racine" H. S. Wood and Metal Band Saw Blades and
"Racine" H. S. Tungsten Power and Hand Hack Saw Blades.

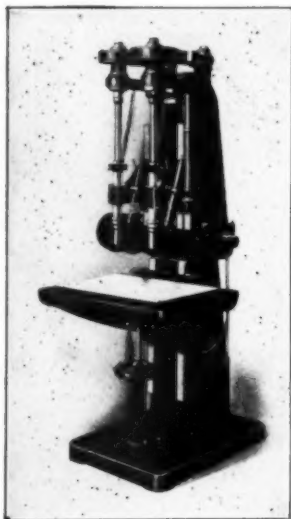
Racine Tool & Machine Co.

Catalog H, 1429 Junction Ave., Racine, Wis.

"STANDARD THE WORLD OVER"

It's New—and Better *The* **VIKTOR**

With 1 to 8 Spindles



The most modern types of machines today are a necessity, forced by strenuous competition. The VIKTOR Drilling Machine is a tool of that type. Among its advantages are:

More { Production
Speed changes
Feed changes

Less { Floor space
Upkeep expense
Operative cost

Rugged construction
Enclosed fool-proof
mechanism
Direct motor drive

The VIKTOR is so universal in its application that it will cover all your drilling requirements within its capacity. We invite investigation in the interest of modern drilling economy. Better drop us a line today.

The Henry & Wright Mfg. Co.
Hartford, Conn., U. S. A.

Second-Hand Machinery

Lists of Second-Hand Machinery, either For Sale, Wanted or For Exchange, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.50** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool Blue Book advertisers.

FOR SALE BY

J. L. Lucas & Son, Inc., - - - **Bridgeport, Conn.**

SCREW CUTTING LATHE.

32"x18' New Haven screw cutting lathe, 99% new, semi-quick change, 10' between centers. Price.....\$1,800.

FOR SALE BY

H & H Machine Company, 4216-18 W. Easton Ave., St. Louis, Mo.

Grinder, Heald No. 60, cylinder,
Grinder, Cincinnati No. 2, plain.

Piston centering machine, Louden.

FOR SALE BY

Kohler Die & Specialty Co., - - - **DeKalb, Ill.**

ELECTRIC WELDER.

One Toledo Electric Welder, type 140, 220 volts, 20 k. w., capacity two ½" sheets; in good condition—now in use. Price, \$350.

FOR SALE BY

The Selfreath-Woodruff Co., - **20 S. Canal St., Dayton, O.**

505-6 Gerke Bldg., Cincinnati, O.

FORMING ROLL.

Bertsch 8' forming roll, 18 gauge capacity, double geared, with tight and loose pulleys and crank for hand operating; hinged end for removing sheets. Price, \$290.

FOR SALE BY

The Reeve-Fritts Company, - **37 So. Desplaines St., Chicago, Ill.**

Boring mill, 30" Ballard vertical.
Gear shaper, 36" Fellows.
Grinder, LeBlond No. 1, with hob grinding attachment.
Grinder, 15" Collis, disc.

Grinder, No. 2AG Dumore, 110 v.
Miller, No. 3 Rockford hand, pr. fd.
Miller, No. 2 Becker universal.
Rolling mill, 3"x5" rolls.
Screw machines, Nos. 0 & 1 Foster.

FOR SALE BY

Sherrod S. MacIntosh & Co., 408 Frankfort Ave., Cleveland, O.

Bolt cutter, 1½" Acme, with some dies, modern, fine condition.
Chuck machine, 2½" Acme flat turret, very good.
Grinder, No. 11 Brown & Sharpe cylindrical, self-contained.
Grinder, Woods universal tool & cutter, partial equipment.

Random selections from large available lists of tools.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co.,

1738 St. Clair Ave., N. E., Cleveland, O.

BOLT CUTTERS.

4" Acme, sgl. hd., cone drive, 85%.

1" Acme, style B, 75%.

4" Acme, single head, complete with equip. of dies and lead screws, 75%.

HEADERS AND FORGING MACHINERY.

Ajax 1" hot pressed nut mche., 90%.

Ajax 1 1/2" hot pressed nut mche., 90%.

Acme 1 1/2" 2-spd. semi-automatic nut burring machine, 4,000 lbs., 90%.

1" Ajax cast-iron body forging machines, (3), 75%.

No. 5 Waterbury-Farrel dble. stroke solid die cold header for 1/2" riv., 60%.

BORING MILLS.

Bullard 24" rapid prod. type, 70%.

60" Bullard 2-head standard.

60" Colburn 2 head vertical 70%.

BULLDOZERS.

Nos. 2, 3 & 4 Williams & White bulldozers.

CRANES.

50-ton Cleveland, 10-ton auxiliary, 220 d. c., 80' span, 90%.

DRILLS—UPRIGHT.

20" Silver back geared drill press.

24" Foote-Burt No. 25 hi-speed, 95%.

24" Superior, high-speed, sliding head, (2), 85%.

32" Cincinnati-Bickford, with tappet, 75%.

DRILLS—RADIAL.

4' Cincinnati-Bickford, 90%.

Wall radials, Cleveland P. & S., 8' & 12'.

DRILLS—MULTI-SPINDLE.

4-spindle 20" Barnes, cone drive, 85%.

Baush 16x20", layout for 16 spindles, 11 spindles in place.

GRINDERS.

Landis, 10x30" plain, 75%.

No. 3 Brown & Sharpe univ., 70%.

Emery wheel grinders, for 24x3" wheels, 60%.

HAMMERS.

250 lb. Beaudry, belt power, 85%.

600 lb. Merrill board drop, 95%.

850 lb. Bell steam forging, 85%.

LATHES.

12"x 6" South Bend, chucks, 90%.

12"x 6" Monarch, chucks, 90%.

16"x13" Chard taper att. chucks, 90%.

16"x 6" Hendey, t. a., 85% (2).

18"x10" American, cone, 75%.

24"x12" Reed, c. r., chuck fitted, 75%.

30"x15" Prentice geared head motor driven lathe, c. r., 80%.

MILLERS.

No. 0 Rockford, 100%.

No. 0 Steptoe plain b. gd., hds., 95%.

20"x7 1/2" x18" Oesterlin plain, 50%.

No. 2 Brown & Sharpe vertical, 60%.

No. 2-A Brown & Sharpe univ., 75%.

No. 3 Brown & Sharpe plain, cone drive, geared feeds, 65%.

No. 3-B lvy. Brown & S. plain, 75%.

24x10 Ingersoll, 4-heads, 80%.

No. 3-B plain Milwaukee, atts., 95%.

PLANERS.

22"x24"x57" Fitchburg, 70%.

30"x30"x8" Gray, single head, 80%.

24"x24"x6" Liberty, new, 1 hd., 100%.

48"x48"x16" Gray, 4 hds., mtr. dr., 95%.

PRESSES.

9' 6" Ohl power bending brake, 85%.

No. 14 Toledo geared horning press.

No. 4 Cleveland inclinable, 95%.

PUNCHES.

No. 2 Hilles & Jones horiz., 70%.

42" gap, American, 70%.

54" gap, American, 70%.

SLOTTERS.

Niles, 4-step cone pulley for c. s. drive, has bracket on, can be used to motor drive electric equipment, 75%.

10" Newton, crank, good.

15" Niles, arranged motor drive, gear feed, electrical equipment, 75%.

TURRET LATHES

2x24 Warner & Swasey, hollow hexagon, geared feed, pump, tools, etc., 60%.

21" Gisholt standard turret lathe, 70%.

18" Libby standard turret lathes.

Nos. 4 and 6 Warner & Swasey standard screw machines.

(Continued on next page)

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

MISCELLANEOUS.

Chain draw benches, 10,000 to 20,000 lbs. Waterbury-Farrel and United Engineering, 20', 80%.
Hack saws, 6" Racine, (2).
Riveters, 24" gap, Hanna, (2).

FOR SALE BY

O. T. Webb Machinery Co., 106 S. Jefferson St., Chicago, Ill.

Beader, small.....	\$ 15.	Riveter, 3/16" Schuster.....	\$ 65.
Drill, 14" H & W h. s.....	55.	Riveter, 4" Schuster.....	135.
Drill, 3-spindle, 12".....	75.	Screw mch., 8" Pratt & Whitney	135.
Drill, 20" b. g., power feed.....	85.	Screw mch., 1" Pratt & Whitney	115.
Grinder, drill, La Salle, dbl.....	35.	Screw machine, No. 4 W. & S.	575.
Grooving machine.....	15.	Shaper, 6" B. & P.....	75.
Miller, Whitney hand.....	85.	Shear, square, 30".....	40.
Miller, No. 25 Becker, b. g.....	285.	Wiring machine.....	15.

FOR SALE BY

H. D. Warner, 26 High St., Hartford, Conn.

Automatics, Fay (3), each.....	\$ 300.	Millers, Lincoln, various makes	
Automatics, 3 1/2" Gridley (6), ea.	350.	(12), \$75, upwards.	
Automatics, 2" to 6" Cleve. (6).		Millers, No 12 P & W., Lincoln	
Automatic, No. 6-A P. & J.		type (6), each \$100, to.....	\$ 125.
Crane, electric.		Pipe cutter, 4" Oster.	
Die sinking mch., P. & W. No. 2.		Planer, 22"x6" Gray.....	350.
Grinder, Bryant chucking.		Press, F. F. No. 5 blanking.....	200.
Grinder, Heald No. 60.		Riveter, No. 0 Townsend.	
Grinder, Norton 10x30.		Rivet spin., 2-sp. No. 83 Grant	200.
Grinder, P. & W. vert. surface.		Screw mche. Foster No. 4, hand.	
Hack saw frame, Atkins.....	\$ 65.	Shear, small alligator, to cut	
Hammer, Bradley 60 lb., helve	400.	1" round.....	100.
Lathe, 21"x8" LeBlond heavy		Shear, circular, to cut 4" to 36"	150.
duty turning, n-early new.....	250.	Welder, butt, 4".....	350.
Miller, Becker No. 3 plain.....	250.		

2,000 Machines for various purposes listed for sale.

Let me know your requirements. What have you for sale?

FOR SALE BY

E. L. Essley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

Branch Store, 78-80 W. Water St., Milwaukee, Wis.

Boiler, 48"x16' Erie 50 h. p. hor. tub.		Lathe, pulley, 40" Streit.	
Boiler, 60"x16' Atlas 80 h.p. hor. tub.		Miller, plain, 28" type "A" Briggs.	
Boring mill, 24" Bullard vert.		Miller, pl., No. 2 Cleve., sgl. pulley dr.	
Boring mche., No. 1 Cleveland.		Miller, univ. No. 2 Cleve. sgl. pul. dr.	
Drill, 24" No. 310 Baker hvy. duty.		Miller, thread, No. 8 Lees-Bradner,	
Drill, No. 25 Foote-Burt.		single pulley drive.	
Drill, mult., D-12 Fox, rect. ang. hd.		Planers, 36"x36"x12' Rockford, 2 hds.	
Engine, Corliss, 125 i. h. p., Vilter,		Planer, plate, 16' No. 3 Niles.	
36" stroke, cyl. 14" dia.		Planer, 72"x62"x45' Hamilton, 4 hds.	
Engine, oil, 80 h. p. Venn-Severin.		Press, No. 512 Niagara, s. s.	
Gear cutter, 30"x10"x4p Flather aut.		Punch, No. 8 Whiting, s. e., 48" thrt.	
Grinder, plain, 16"x72" Landis cyl.		Shear, 8' Stoll, power sq., gd.	
Hammer, 1200 lb. Bliss board drop.		Sh., splitting, No 134 Lennox rotary.	
Keyseat miller, No. 3 J. T. Burr.		Shear, No. 686 Niagara gap.	
Lathe, 30"x12' Hendey, q. c. g.		Shear, gate, No. 6 1/2 Hiles & J. crk.	
Lathe, 30"x12' LeBlond.		Slotter, 36" Niles, gd.	
Lathe, 30"x28 1/2' Pond.		Turret lathe, No. 2 A W. & S. univ.	
Lathe, 38"x18' New Haven.		Turret lathe, 2" Wood tilted.	

SECOND-HAND MACHINERY

FOR SALE BY

A. M. Stoehr Machinery Co.,

Blue printing and drying machine.
Boring mills, 42" Baush, 54 & 60"
Niles, all have 2 heads.
Drill presses, 1, 2, 3 & 4 spindle
Sigourney; 1 & 2 sp. Avey, H. & W.
and others.
Drill press, 3 sp. Barnes, all geared;
3, 4, 5 & 6" radial drill presses.
Gear hobbors, cutters, 12" Barber-C.;
12" Clin.; 48" & 60" Gould & E.
Grinders, Heald piston ring (4);
No. 60 Heald, cylinder: 3" x 18"
Norton and others.
Hammer, 500 lb. Beaudry, & others.
Lathes, 7" to 60" swing.
Lathe, 22" to 44" McCabe.
Lathes, spinning, 15" & 24".
Milling machines, plain & univ.
Oil extractors, centrifugal, (8).

560 W. Adams St., Chicago, Ill.

Pipe machines, 2" & 6" Jarecki.
Punch and shears, No. 5 Long & A.
double end, 1" thru 1/2"; Perkins.
sgl. end, 24" thrt.; No. 14 W. & W.,
double end, 15" thrt.
Punch presses, No. 16 Bliss horning;
and others arbor & kick; No. 4 L.
& A. multiple punch; No. 4
Robinson, o. b. i.
Rolls, 10" Bertsch, pipe forming; 10"
Rock River, 1/2".
Screw machines, Nos. 2 & 3 Foster
(12), Nos. 52 & 53 Acme, No. 0
B. & S., others plain & universal.
Shears, No. 3 N. D. splitting, 1/2" cap.
Shapers, 16" Steptoe, 17" Flatler
and others.
Welders, both spot and butt.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

LATHES.

14" x 6' American, q. c.
15" x 8' Sidney, q. c.
18" x 6' American, q. c.
19" x 8' Sidney, q. c. g.
22" x 16" New Haven.
24" x 12" Lodge & Shipley, q. c.
25" x 16" Niles, plain change.

33" x 20' Draper, triple geared.
30" x 23' plain change gear.
26" x 13' Putnam, q. c., ar. for motor.
36" x 18' Prentice Bros., t. a.
96" x 25" heavy engine lathe.
20' Pit lathe.

SHAPERS.

16" Flatler, 4 speeds.
24" Gould & Eberhardt, b. g.

24" Potter & Johnston.
28" American.

PLANERS.

32" x 32" x 8' plauer.

60" x 60" x 12' Cincinnati, 4 heads.

GRINDERS.

8" Heald rotary, with magnetic ck.
Wilmarth & Morman drill grinder.

12" x 40" Landis universal.
30" Diamond face grinder.

DRILLING MACHINES.

25" Weigle, sliding head.
26" Barnes, stationary head.
40" Aurora, sliding head.

3' arm Western radial.
4' arm Prentice Bros. radial.
3' arm Bickford, speed box.

MILLERS.

No. 2 Kempsmith plain.
No. 5 Cincinnati plain.
No. 3 Becker plain.
No. 4 Becker vertical.
No. 9 Kempsmith universal.

No. 2 Adams milling attachment.
No. 33 Kempsmith manufacturing.
No. 3-B B. & S., single pulley drive.
No. 2 Knight vertical.

MISCELLANEOUS.

Bolt cutter, double, Landis.
Boring mill, No. 1 Binsse horiz.
Boring mill, 60" Bullard.
Bulldozer, 75-ton Lourie hydraulic.
Engines, Corliss, 75 to 200 h. p.
Hammer, 200 lb. Bradley.
Keyseater, No. 00 Baker.
Magnetic pulley, 24" x 26".
Press, portable hydraulic.
Punch, No. 5 Long & Allst., 5" thrt.
Punch, No. 2 Long & Allst., 12" thrt.
Punch, No. 7 Long & Allst., 4" thrt.

Punch, No. 12 Williams-White, dbl.
Riveters, lattice, Allen.
Riveter, 24" Sheppard.
Saw, No. 12 Higley.
Saw, No. 21 Higley.
Saw, No. 15 Lea-Simplex.
Saw, Lucas revolving, 31" blade.
Screw mch., No. 4 Brown & Sharpe.
Shear, power, circle, Niagara.
Slitting shear, power, Pettingell.
Tilted turret lathes, Wood, (3).

SECOND-HAND MACHINERY

FOR SALE BY

D. C. Oriatt & Company, - 1102 St. Clair Ave., Cleveland, Ohio

DRAW BENCHES.

Standard Engineering Co., and Waterbury-Farrel Co.
No. 1—12,000 pound. No. 2—20,000 pound.

BULLDOZERS.

Nos. 2, 3, 4, 5, 6, 7 & 8 Williams & White.

PRESSES AND BRAKES.

8' 6" Ohls power bending brake.
No. 36-P Toledo punching press.
30-ton Lucas straightening.
Nos. 61 & 62 Bliss presses.
No. 27-K Bliss knuckle joint.
Toledo No. 666, knuckle joint.
32-P Toledo, flywheel.
No. 165 Toledo toggle drawing.

No. 5 Bliss styles, geared.
No. 14 Toledo horning press, grd.
No. 167 Ferracute press.
No. 18 Bliss toggle, (2).
No. 20 Bliss inclinable.
No. 35-P Toledo, geared, (2).
PG 5 Ferracute press.
P-4 Ferracute press.

TURRET LATHES AND AUTOMATICS.

No. 53 National Acme automatic.
18" Gridley multiple spindle auto.
24" & 36" Gridley single spd. auto.
18", 24", 36", 48" Cleveland auto.
No. 2 Biggs hand screw machine.
No. 4 Warner & Swasey, bk. grd., (4).
24"x24" J. & L. turret lathe.
24" Bullard vertical turret lathe.

18" Libby turret lathes, (4).
Nos. 52, 72 & 515 National Auto.
Nos. 2 & 6 Warner & Swasey.
3-A Warner & Swasey, hollow-hex.
Universal No. 4 Warner & Swasey.
No. 24 New Britain automatic.
24"x26" Cincinnati Acme, geared head, flat turret.

LATHES.

9"x14" Porter-Cable, production.
20"x16" Porter, 5-step cone.
14"x 6" Hendey, taper att.
15"x 8" Flather.
17"x 6" Sidney, quick change.

17"x 8" LeBlond, semi-quick change.
16"x 6" Cincinnati, quick ch. gears.
15"x 6" Carroll-Jamieson.
24"x12" Schumacher & Boye, q. c. g.
24"x12" Reed lathe.

DRILL PRESSES.

4' Cincinnati-Bickford radial.
4' American radial, gear box drive.
Leland-Gifford 1 & 2 spindle.
3-spindle Demco high speed.
4-spindle hump back Barnes 20".
4-spindle Cincinnati-Bickford 20".
W. F. & J. Barnes 28", tapping att.

No. 2 Colburn 20" heavy duty.
Colburn H. D. No. D-4 (2), mounted on base, adjustable centers.
No. 4 Colburn heavy duty.
No. 25 Foote-Burt 24".
Allen 2 spindle.
No. 17 Foote-Burt 4 spdl., adj.

MILLS AND MILLING MACHINES.

Nos. 31 & 32 Lucas horizontal bor.
No. 6 Becker vertical.
Betts 3" bar horizontal boring.
Niles 10" boring mill.
Colburn 60" boring mill, 2 heads.
42" Bullard, 2 swivel heads, m. dr.

No. 1-Y Brown & Sharpe.
22" Briggs millers, type "A".
34" Briggs millers, type "B".
No. 3-A Brown & Sharpe universal.
No. 5-C Becker vertical.
U. S. & No. 6 Whitney hand millers.

GRINDERS.

Nos. 60 & 65 Heald, cylinder.
No. 3 Brown & Sharpe, surface.
3" Pratt & Whitney, surface.
Norton tool and cutter.

No. 3 Oesterlein tool grinder.
20" Diamond disc grinder.
Diamond surface, range 24"x12"x9".
18" Gardner disc No. 2, dbl. end.

HAMMERS.

Riveters, 3A-HD and 4-A high sp.
Riveters, 1/2" Schuster, 1/2" Grant.

No. 8 Beaudry 250 lb. hammer.
Bell 800 lb. steam hammer.

MISCELLANEOUS.

Arbor press, Atlas.
Flower, No. 3 Stewart.
Bolt cutter, 1/2" Acme, single head.
Bolt cutter, 1" Acme, dbl. head.
Bolt cutter, 24" Acme, single head.
Broaching machine, No. 1 LaPointe.
Centering machine, Whiton.
Cut-off machine, No. 3 Modern.
Gear hobbors, Nos. 3 and 12 Barber-Colman.

Oil separator, No. 2 American.
Planer, 23"x28"x8" D. & H., open s.
Plate shear, 128"x4" capacity, motor drive, weight 60,000 lbs.
Saw, 22" Lucas circular.
Shaper, 17" Smith & Mills.
Shaper, 20" Hendey, friction type.
Slotter, 15" Sellers.
Tappers, Nos. 2, 2X & 2BG Garvin.
Upsetter, 1/2" Acme, steel bed.

Above is only partial list—send us your inquiries.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., - - - **Bridgeport, Conn.**

MILLING MACHINES.

7-H Becker milling machines, in very nice condition. Price, each.....\$125.
Send for photo.

FOR SALE BY

Louis E. Emerman & Company, 1761 Elston Ave., Chicago, Ill.

Here Are a Few Good Bargains!!

S. R. E. W. MACHINES.

Gridley 2½" and 3½" automatics, complete, all in perfect condition, ready to operate, each.....\$ 300.
Brown & S. 00 screw mch., wonderful condition, complete. Yours for.. 350.

LATHES.

Gisholt 20" automatic turret lathes, 6½" spindle, 95% new; complete just as the day they left the factory; manufacturer's price, about \$5000; our price, each.....\$1750.
Gisholt square head turret lathes, simplified type, 20"x6" bed, 6" hollow spindle; a bargain at our price of, each.....\$ 195.
Fitchburg 3½"x60" Lo-swing lathes, with taper attachment, single pulley drive, A1 condition.....\$ 275.

GRINDERS.

Norton 6"x32" plain grinders, complete; each, only.....\$ 475.
Landis 12"x52" and 12"x36" plain self-contained cylindrical grinders, all in first class condition, each.....\$ 575.

MULTIPLE SPINDLE DRILLS.

No. 30 Natros, 20"x40" rectangular head, 48 spindles; a few left; act quick as they won't last long at, each.....\$1150.
No. 10 Baush, 24 spindles, rectangular head.....1000.
The above are just a few of the many items we have. Send us your inquiries.
Have you a copy of our "Handy Book"?

FOR SALE BY

B. L. Saltzman, - - - **524 W. Van Buren St., Chicago**

Telephones Wabash 6882-4095

MOTORS.

New ½ h. p., 1 phase, rep. ind., 110/220 volt.....\$32.50.
New 1 h. p., 1 phase, rep. ind., 110/220 volt.....50.00.
New 1 h. p., 3 phase, 60 cycle.....40.00.

All of the above, factory guaranteed for one year.

We also have a variety of other types, new and used, from ½ h. p. to 200 h. p., a. c. and d. c.

LATHES.

24"x26" Acme flat turret. | 18"x 8' Flather.
20"x8" LeBlond. | 14"x 6' American.
14"x 6' Sebastian. | 14"x 6' LeBlond.

DRILL PRESSES.

22" Barnes. | 24" Hamilton.
24" Barnes. | 3 spindle Sigourney.

SHEAR.

H. Collier Smith 48" Quickwork, ½" capacity.

PUNCH PRESSES.

Two No. 76 Consolidated, direct connected to 7½ h. p., 3 phase motors.

MISCELLANEOUS.

Bolt threader, Wells double head. | Miller, No. 1½ Kemp Smith universal.
Boring mill, 30" Colburn. | Screw machine, No. 2 Foster
Grinder, disc, No. 8 Besly 20". | Shaper, crank, 16" Smith & Mills.
Hack saw, Peerless high speed, 9x9. | Shaper, 14" Hendey.

Miller, No. 1 Kemp Smith plain.

We have for sale a large line of woodworking and ironworking machinery.
Write us today for what you need. Also complete line of belting, pulleys, shafting and hangers.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., 28th St. & A. V. R. R., Pittsburgh, Pa.

LATHES.

50"x49'6" Johnson, triple geared.
30"x13' New Haven.
28"x14' Putnam, h. s.
28"x12' Pittsburgh, dbl. b. g.
28"x20'6" Putnam, b. g., c. r.
28"x10'6" Walcott, q. c. g.
24"x18'6" Johnson lathe.
19"x10' LeBlond, motor drive.
19"x6' Bullard, c. r., b. g.
18"x8' Mueller, q. c. g.
18"x8' Sidney, q. c. g., d. b. g.
16"x6' Blaisdell, h. s.
16"x6' Cleveland, q. c. g., new.
16"x6' South Bend, h. s., t. a.
15"x8' Schellenbach, d. b. g., h. s.
14"x7' Hendey, m. d.
16"x5' Fox turret with chasing bar.
3"x36" J. & L. flat turret.
24"x24" J. & L. flat turret.
24"x6' Gisholt tur., 64" h.s., m.d.
1"x7" Acme screw machine.
10"x4' Blount speed lathe.
12"x45" speed lathe.

PLANERS AND SHAPERS.

24"x24"x8' Chandler planer.
48"x48"x16'2" Cleveland open side planer, 1 side & 2 rail heads, m. d.
48"x48"x22' Pond planer, 4 heads.
120"x120"x25' Sellers planer, 4 heads.
16" G. & E., 20" Columbia shapers.

DRILLS AND BORING MILLS.

20" Champion, new, pl. w. & l.
20" Silver, new, b. g., p. f.
24" Weigle, b. g., patent speed box.
36" Prentice high speed.
40" New Haven, b. g. drill.
4' Dreses radial drills.
5' Bickford radial.
64" & 8' Pond radial drills.
24" Canedy-Otto post radial.
Burke Nos. 0 & 1 sensitive drills.
Champion post drills, 4" & 1".
30" W. & S. boring mill.
36" Bridgeport boring mill.
42" & 50" Bullard bor. m., 2 heads.
36", 51", 90", 10' Niles bor. mills.
84" Pond boring mill.
Beaman-Smith No. 5 post type hor. boring & drilling machine, spindle 8" dia., floor plate 12"x16".
Beaman & Smith post type hor. boring mill, 34" bar, m. d.

PUNCHES, SHEARS, PRESSES AND ROLLS.

King Bridge Co. s. e. punch, 30" thr.
50" throat Reade sgl. end punch and shear; massive construction.
Rock River punch & shear, 24" throat, 4" x 1".
L. & A. punch & shs. Nos. 3, 6, 7.
Mahoning punch & shear, 32" thr.
Plunger type punch & shear, 9" thr., six 1/2" holes thru 3/4" plate and 6x1/2" at one operation.
Carlin alligator shear, 14" capacity.
Garrison plate shear, cap. 1/2"x81", m.d.
Waterbury-Farrel rotary sh., 14" thr.
Mesta plate shear, cap. 1/2"x156".
Hilles & Jones gate shear, capacity 84x1/2", motor drive.
Pusey-Jones guillotine shear, 3" cap.
Hilles-Jones No. 3 guillotine shear.
Niagara pr. sq. shears, 36".
Stoll 53" square shears.
No. 56 dbl. housing knuckle press.
Double acting drawing press, 31" stroke.
Stiles No. 3 inclinable press.
Z. & H. inc. press.
Straight-side punch press, 1/2" str.

MISCELLANEOUS.

Air compressors: Chicago 19x12x14; Chicago 9"x11".
Blowers, Buffalo No. 8 vol.; Sturtevant No. 8.
Bulldozer, W.-W. Nos. 2 & 5.
Cold saw, Wagner, size 18 type 3.
Cranes, portable 2 ton.
Engine, gas, 15 h. p. Fenner.
Forge, No. 41 Champion new.
Gear cutters, No. 13 B. & S.
Grinder, Ott 6"x6" internal.
Grinder, Landis No. 3 universal.
Grinders, Plymouth Nos. 13, 17, 20.
Hammers: 1500 lb. Bement st. dr.; 800, 2000 & 2500 lb. B-M st. forg.
Hammers, 25, 60 & 80 lb. Bradley.
Hoist, contractor's steam, with 8 h. p. boiler & 5 h. p. engine.
Hammer, W. & W. 55 lb. upright.
Mills: Milwaukee 2-B universal.
Cincinnati No. 2 high duty universal; Cincinnati No. 3-S. univ.; Hendey-Norton No. 3 universal; B. & S. No. 2-B, Cincinnati No. 3, and Garvin No. 12 plain; Briggs high duty production; Cincinnati No. 2 vertical.
Motor, Fairbanks-Morse, 20 h. p., 3 phase, 60 cycle.
Pipe machines, Merrill 4".
Pipe machines, Eaton-Cole-Burnham 4" & 8".
Saw, Economy No. 7, hack.
Slotter, Niles 15".
Upsetters, Acme, 1/2" steel bed.

SECOND-HAND MACHINERY

FOR SALE BY

Brown Machinery Co.,

Boring mill, No. 10 Beaman-S., hor.
Boring mill, 60" Sellers, 2 heads.
Drill, 24" Aurora, sl. hd., b. g., p. f.
Drill, 24" Cincinnati, sl. hd., b. g., p. f.
Drill, 26-spindle Baush, No. 3.
Drill, 6 spindle Allen, b. b.
Drills, Nos. 1 & 3 Barnes hor. radial.
Gear cutter, 30" Whiton.
Gear hobber, No. 1 Farwell.
Gear shaper, Fellows 36".
Grinders, No. 6 & No. 14 Besly.
Grinders, 5x18 Ott; Norton.
Grinder, tool, No. 1 Diamond.
Grinder, No. 12 Brown & Sharpe.
Grinder, No. 3 Ohio univ.
Hammer, Dupont, size D.
Lathes, 14", 16", 20", 26" Walcott,
d. b. g., q. c. g.
Lathe, 18"x10" LeBlond.
Lathes, 16"x6" South Bend.
Lathe, 17"x 6" Cincinnati, semi q. c.
Miller, I-B Fox horizontal.
Miller, No. 4 Hendey, b. g.
Miller, No. 7-H Becker.
Miller, No. 2 American Lincoln.

2323 N. 9th St., St. Louis, Mo.

Miller, No. 2 Brown & Sharpe.
Miller, No. 3-B Owen, vert. att.
Presses, L. & J. Nos. 1, 2, 3.
Press, arch, No. 42 Swaine.
Press, toggle, Robinson 10".
Press, No. 5 Bliss Stiles.
Profilers, two-spindle, Pratt &
Whitney, Putnam, Reed-Prentice.
Punch, No. 39 Beloit, cap. 4" in 1".
Punch, Ryerson-Kling rapid action,
18" throat, 1/2 in 1".
Punch & shears, single end, No. 4
Bremer, 4" in 1", 12" throat.
Punch & shear, No. 5 Long & All-
statter, 1/2 in 1", 4" thrt., dbl. end.
Roll, plate straightening, No. 6
Hilles & Jones.
Shears, 134 Marshalltown rotary, 1".
Shear, square, 72" Niagara, 18 ga.
Shears, No. 260 Peerless 60", 14 ga.
Shear, No. 13 Pettin, rotary, 14 ga.
Stake riveter & punch, No. 3 Hilles
& Jones, 5' throat.
Welder, spot, No. 133 Thompson.

Many other bargains. Write for Stock List No. 120.

FOR SALE BY

Fitzsimmons-Cole Machinery Company

28th St., & A. V. R. R.,

Pittsburgh, Pa.

Air compressor, 6x3 portable, m. d.
Air compressor, 8x8 Chicago, 75 cu. ft.
Air compressor, 9x11 Chi'go, 130 cu. ft.
Air compress., 10x12 Chi'go, 164 cu. ft.
Air compressor, 13x8 Chi'go, 197 cu. ft.
Air compressor, 16x10x10 Blaisdell,
418 cu. ft.
Bolt cutter, 2 1/2" Landis.
Boring mill, hor. Niles, 6" spdl., b. d.
Boring mill, hor. Betts, 3" spdl., b. d.
Boring mill, hor. Newark, 3" sp., b. d.
Boring mill, hor. B. & S., 8" sp., m. d.
Boring mill, vert. 36" Niles, 2 hds., b. d.
Boring mill, vert. 60" Betts, 2 hds., m. d.
Boring mill, vert. 96" Cincinnati, 2 hds.
Boring mill, vert. 120" Betts, 2 hds., b. d.
Brake, 10" Chicago.
Cold saw, 18" Higley.
Drill press, 25" Weigle.
Drill, radial, 3" Mueller, s. p. d., t. a.
Drill, radial, 4" Bickford, s. p. d., t. a.
Drill, radial, 4" Mueller, m. d.
Drill, radial, 5" Niles, b. d.
Gear hobbess, 36" Farwell.
Hammer, 100 lb. Mayer upright.
Hammers, drop.
Hammers, forging.
Keyseater, No. 0 Mitts & Merrill.
Keyseater, No. 3 Mitts & Merrill.
Lathe, 16"x6" South Bend.
Lathe, 26"x10" Putnam, q. c. g., t. a.,
m. d.

Lathe, 18"x9" L. & S., q. c. g., t. a., b. d.
Lathe, 32"x14" Bridgeford, t. a., m. d.
Lathe, 36"x27" Johnson, t. g., t. a., m. d.
Lathe, 40"x20" Pond, t. g., t. a., b. d.
Lathe, 46"x17" New Haven, t. g., b. d.
Lathe, 42"x50" Sellers, m. d.
Lathe, 50"x34" Pittsburgh, t. g., m.
d., 2 car.
Lathe, 62"x54" Johnson, t. g., b. d.
Miller, slab, 30"x30"x12" Ingersoll.
Miller, univ., No. 2-B Milwaukee.
Pipe machine, 2" Borden.
Pit lathe, 30".
Planer, 30"x30"x14" Pond, m. d., 2 hds.
Planer, 36"x36"x12" New Haven., b.
d., 1 head.
Planer, 42"x42"x12" Niles, b. d., 4 hds.
Planer, 48"x48"x10" Cintil., b. d., 2 hds.
Planer, 56"x56"x12" Pond, b. d., 2 hds.
Presses.
Roll lathes.
Shaper, 24" Gould & Eberhardt, b. d.
Shears, 10"x4" United plate shear,
m. d.
Shear, 36"x8" United guil. sh'r., m. d.
Shear, 24"x4" hot Wm. Tod slab sh'r.
Shear, 15" Pels beam shear.
Shears, alligator, 1 1/2 to 3 1/2", m. d.
Shear, Mesta bar, 4x4 cold, m. d.
Sheet leveler.
Straighteners, 2 1/2" to 6" Brightman.
Turret lathes, No. 8 Warner & S.

SECOND-HAND MACHINERY

FOR SALE BY

The Hess Schenck Company,

Cleveland, Ohio

AUTOMATICS.

- | | |
|--|-------------------------------------|
| 1½" Cleveland, model B. | Fay, equipped for gear blanks, (2). |
| 1½" Gridleys, motor drive, a. c., (5). | 1½" model A Cleveland, (3). |
| ¾" No. 52 National Acme. | ¾" & ½" model A Cleveland. |

BORING MILLS.

- No. 48 Colburn vertical boring mill, 2 swivel heads.
No. 48 Colburn vertical boring mill, 1 swivel head and 1 turret head.

DRILLS—RADIAL.

- 2½' Bickford radial, cone type, rectangular swinging table.
3' Cincinnati Bickford, gear box drive, swinging table.
4' Hammond sensitive radial drill.

DRILLS—UPRIGHT.

- | | |
|---|---------------------------------------|
| 2-spindle Avey ball bearing. | No. 314 sgl. sp. Baker high duty (2). |
| 20" Barnes all-gear, (3). | 2-spindle Moline hole hog, 7-D. |
| 28" Barnes, sliding head, b. g., p. f., | 4-spindle Moline hole hog, 13-D. |
| a. a. | 6-spindle Moline hole hog, 65-D. |
| 28" Barnes, sliding hd., b. g. & p. f. | |

GRINDERS.

- | | |
|------------------------------------|--------------------------------------|
| Model B 1½x2½ Yankee twist drill. | 16x66 Landis, with crankshaft grind- |
| No. 1 LeBlond univ. tool & cutter. | ing equipment. |
| 10x24 Landis universal. | 24x12x9 Diamond auto. surface. |

LATHES.

- 12"x 5' Hendey, tie bar head, q. c. g., comp. rest, oil pan.
12"x 5' Hendey, tie bar head, q. c. g., taper att., comp. rest, oil pan.
14"x10' Whitcomb-Blaisdell, 3-step cone, d. b. g., q. c. g., comp. rest, oil pan and pump, 12" 4-jaw chuck.
16"x 8' Hamilton, q. c. gear, comp rest, 12" 4-jaw chuck.
16"x 6' Monarch, q. c. g., double back geared, 8" 4-jaw chuck.
18"x 6' Schumacher & Boye standard lathe, 12" 4-jaw chuck, comp. rest.
18"x 9' Chard, 3-step cone, d. b. g., semi-change feed, 4-jaw chuck.
26"x10' LeBlond crankshaft lathes, universal type, (2).

MILLING MACHINES.

- | | |
|---|--|
| No. 25 Becker plain, b. g., hor. feed to table, direct connected 1 h. p. 3 phase, 60 cycle, 220 volt motor. | No. 2 Garvin duplex. |
| No. 25 Becker plain, back geared, horizontal feed to table. | 18" Cincinnati duplex. |
| No. 2 B. & S. plain, cone type. | No. 3 Kempsmith plain, with vertical attachment. |
| No. 2B heavy B. & S., cone type. | Cincinnati, Lincoln type, semi-auto., table 11x51. |
| | No. 2 B. & S. univ. cone type miller. |

PLANERS.

- | | |
|---------------------------------------|-------------------------|
| 24"x34"x8' Cincinnati, 1 hd. on rail. | 42"x36"x8' Gray planer. |
|---------------------------------------|-------------------------|

SHAPERS.

- | | |
|---------------------------|------------------------------|
| 16" Steptoe crank. | 16" Columbia b. g. crank. |
| 16" Ohio crank. | 16" Ohio heavy b. g. crank. |
| 15" Hendey shaper. | 16" G. E. back geared crank. |
| 16" Hamilton b. g. crank. | 25" Smith & Mills, b. g. |

TURRET LATHES.

- No. 1 Garvin screw machine, ½" cap., auto chuck, wire feed, oil pan.
No. 2 B. & O. hand screw machine, auto. chuck, 1" cap., plain head, oil pan.
No. 4 B. & O. univ. turret lathe, f. g. head, auto. chuck, chasing att., taper att., ex. cap. chuck, set-over and swivel turret.
No. 6 W. & S. screw mchs., p. f. to turret & cross slide, oil pan & pump, (2)

MISCELLANEOUS.

- | | |
|--|---|
| Arc welder, 50 to 300 amp., 70 volts. | Hot pressed gr. nut mche., 1½" Ajax. |
| Broaches, No. 3 LaPointe, single and double spindle. | Nut burring machine, 1½" Acme, double spindle, semi-auto. |
| Die sinker, No. 2 Pratt & Whitney. | Press, No. 3 Toledo, o. b. i. |
| Forging machine, 1" Acme, continuous motion. | Shear, power squaring, 36" Niagara. |
| Hot pressed gear nut mche., 1" Ajax. | Tappers, 6-spindle ½" & ¾" Acme. |

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., - **LATHE.** - **Bridgeport, Conn.**
 16"x13' Wood-Light lathe. Price.....\$750.

FOR SALE BY

W. P. Little Co., - **1616 Columbus Road, Cleveland, Ohio**
BROACHING MACHINES.

No. 3A Lapointe Hudson. | No. 4 Lapointe Hudson.
BORING MILLS.
 30" Colburn vertical. | No. 3 Marvel cylinder borer.

DRILL PRESSES.
 16" Hoosier. | 26" Snyder, b. g., p. f.
 20" Hoosier. | 3' Prentice radial.

MANUFACTURING DRILL PRESS.
 4-spindle Rockford, with automatic approach and return feed.

KEYSEATING MACHINES.
 No. 0 Mitts & Merrill. | No. 2 Catlin.

PLANER.
 30"x30"x10' Gray, with one head.

PRESSES.
 No. 144 Williams & White, 15" thrt. | No. 87 Zeh & Hahnmemann.
 30" geared, arch, old type. | Z. & H. double acting cam drawing.

GRINDERS.
 No. 75 Heald internal. | No. 3 B. & S. cutter & reamer.
 Bath grinder, spline attach. | No. 6 Rivett internal.

MISCELLANEOUS.
 Hammer, 50 lb. Bradley upright pwr. | Spline miller, 2" Pratt & Whitney.
 Hammers, 50 lb. belt lift drop, (3). | Turret lathe, No. 1 Garvin.
 Riveter, 3/4" Shuster. | Turret lathe, No. 2 W. & S.

Partial list. Send us your inquiries.

FOR SALE BY

The H. A. Smith Mchy. Co., - **501 E. Water St., Syracuse, N. Y.**
DRILL PRESSES.

24" Barnes self-oiling, all-grd.. (2). | 36" Snyder, slid. hd., with tap. att.
 26" Barnes all-geared, sliding head, | No. 11 Natco multiple spindle.
 with taper. | Allen single-spdle., ball bearing, (2).
 24" Weigel, back grd., sliding head. | Allen 2-spindle, ball bearing.
 24" Weigel, with tapping attach., | Allen 4-spindle, ball bearing, (2).
 30" Snyder, sliding head. | Allen 6-spindle, ball bearing.

GRINDERS.
 Diamond 84" face grinder. | Modern 11x36 plain.
 Bath No. 24 universal. | Landis 16x52 plain.
 Brown & Sharpe No. 10 plain. | Sellers automatic twist drill grinder.
 Brown & Sharpe No. 11 plain, (3).

LATHES.
 20"x 8' Cisco, with taper attachment. | 21"x12' Porter, increase swing att.
 20"x10' Monarch, quick change. | Porter-Cable lathes, (3).

MILLING MACHINES.
 No. 1-B Kearney & Trecker pl., (2). | No. 12-B Brown & Sharpe.
 No. 3-B Kearney & Trecker univ. | No. 33 Kempsmith.

SCREW MACHINES AND TURRET LATHES.
 2" cap. Pratt & Whitney flat turret. | No. 4 Warner & Swasey g. f. h.
 21" Gisholt turret, 3/4" spindle. | screw machines, (2).

SHAPERS.
 15" Hendey friction, (2). | 16" Potter & Johnston.

AUTOMATIC SCREW MACHINES.
 44" Cleveland automatic screw machines, (3).

MISCELLANEOUS.
 Band saw, metal, Napier, motor dr. | Soda kettle, Brown & Sharpe.
 And numerous Electric Motors.

SECOND-HAND MACHINERY

FOR SALE BY

Marr-Galbreath Machinery Co.,

Bending rolls, 50"x8"; 18"x1"; 10"x8".
Blower, No. 1 Garden City, rotary.
Blower, No. 20 Connersville, rotary pressure.
Bolt cutters, Acme, 2", 3" & 6".
Boring mill, No. 5 B. & S., post.
Boring mill, Betts horiz., 3 & 4 bars.
Boring mill, hor., Cleveland, 2 1/2" bar.
Boring & turn'g mill, 72" Betts, vert.
Brake, hand & foot, 50" P. S. & W., "Harc".
Bulldozers, Nos. 1, 2, 3, 4, 5, 26 & 27.
Bulldozers, Nos. 6, 8 & 9 W. W.
Clam shell bucket, 4 yard.
Compressor, 14"x10"x12", Ingersoll-Sargent.
Compressor, 13"x16" gas, 237 cu. ft.
Compressor, 10"x8" Bury belted, 90%
Die filing machine, Rearwin.
Drills, radial, 3" Bickford.
Drill, radial, 3" Fosdick plain.
Drill, radial, 3 1/2" Bickford, gear box.
Drill, radial, 5" Prentice plain, t. a.
Drill, radial, 2 1/2" Taylor-Fenn, sens.
Drills, 36" Hoefel; 26" Hamilton.
Drills, 22" Cincinnati; 24" Aurora.
Drills, No. 2 Colburn, mfg. type, (4).
Drill, Allen, 14" sensitive, 4-spdl.
Drill, 4-spdl. gang, No. 2 Colburn.
Drill, heavy duty, 24" Foote-Burt.
Exhausters, Nos. 5 & 8 Buffalo.
Exhausters, No. 28 Sturtevant, dbl.
Forging mchs., 1 1/2" Acme, side shear.
Furnace, Tate-Jones, gas hardening.
Furnace, Tate-Jones, oil tempering.
Gear hobber, No. 12 Barber Colman, 98%
Grinder, No. 3 Ohio univ. tool & cut.
Grinder, No. 2 Stenotype, double end, with 2 magnetic chucks 7"x9".
Hack saws, No. 5 Marvel auto. 6"x6".
Hack saw, Millers Falls, 6"x6".
Hammers, 80 lb. Bradley horiz. helve
Hammers, steam drop, 1500, 3000 lb.
Hammers, st. drop, 5000, 1200 lbs.
Keyseater, No. 1 Baker, arr. for mtr.
Lathe, gap, 36/60"x12/20" Harrington.
Lathe, 36"x16" American, g. h. t. a., a. c. motor. (98%)
Lathe, 30"x12" LeBlond, q. c. g., t. a.
Lathe, 24"x8" Porter, 2 1/2" h. s., c. r.
Lathe, 18"x10" Porter, s. b. g., c. r.
Lathe, 18"x8" Hollingworth, q. c. g.
Lathe, 18"x8 1/2" Hendey, pl. change.
Lathes, 18"x10" S. & B., belt fd.
Lathes, 18"x10" L. & S., LeBlond.
Lathes, 20"x10" Schellenbach, gd. hd.
Lathe, 16"x8" Bradford, pl. change.
Lathe, 16"x8" L. & S., mtr. 220v., d. c.
Lathe, 15"x6" Sidney, q. c. g., d. b. g.
Lathe, 14"x6" Monarch, q. c. g., t. a.
Lathes, Porter-Cable 9" production, (4).
Lathe, speed, 11"x4" Prentiss, t-rest.

127 Water St., Pittsburgh, Pa.

Miller, vert., No. 3 Becker, gear box.
Miller, No. 1 U. S. hand.
Millers, vert., Nos. 0 & 1 Bickett.
Miller, bench, No. 1 Burke, hand.
Miller, No. 3 Cincinnati, plain, table 10"x47".
Miller, No. 3H LeBlond, pl. ind. hd.
Miller, No. 35 Oesterlein, universal.
Miller, No. 2 Kemp-Smith universal.
Nut tapper, 1/2" Acme 6-sp. semi-auto.
Pipe machine, 6" Loew, belted, dies, \$300.
Planer, 56"x56"x12' Pond, 4 heads, motor drive.
Planer, 42"x42"x12' Betts, 1 head.
Planer, 42"x36"x20" Cin'ti, 4 heads.
Planer, 30"x30"x8' Niles, hy., 2 hds.
Planer, 24"x24"x8' Ohio, hvy., 1 hd.
Planer, 22"x22"x6' Gray, 1 head.
Planer, 16"x16"x12', crank drive.
Press, C 5 Ferracute, o. b. l. 6100 lb.
Press or brake, 10" Robinson, toggle, 20 gauge.
Press, No. 27 Bliss, horning, b. g.
Presses, No. 56 Toledo, b. g., 4" str.
Press, 59 Toledo, d. b. g., 6" stroke.
Press, No. 15 Toledo, grd., 1800 lb.
Press, No. 56 Toledo, pl. trim., 2" str.
Press, No. 11 Perkins, pl trim., 3 1/2" str.
Press, Garrison, tie rod, grd., 4 1/2" st.
Press, Chambersburg, trim., pl., 3" st.
Press, No. 3 Bliss, punch type, 1 1/2" st.
Punch, No. 12 Badger, hand, 1 1/2"x3".
Punches, hand, H. W. Nos 5 & 7, 1 1/2"x3".
Punch, single, No. 2 L. & A., cap. 1"x1", 15" throat.
Riveting hammer, 3A high speed.
Riveter, 1" Shuster, style A.
Seamer, No. 305 Toledo, double.
Shaper, 7" Rhodes, crank, horiz.
Shaper, 21" American, b. g., crank.
Shapers, 20 & 24" Cin'ti, b. g., crank.
Shaper, 18" Hollingworth, b. g.
Shaper, crank, 17" Smith & M., s. g.
Shapers, 16" Barker, crank.
Shear, squaring, 36" P. S. & W., foot.
Shear, squaring, 42"x1 1/2", power.
Shear, slitting, cap. 1/2", 12" blade.
Shear, Lewis univ., splitting cap. 1/2".
Shear, rotary, 4" Lennox, 8" gap.
Shear, alligator, No. 5, cap. 3" sq.
Shear, alligator, No. 18 Carlin, 2 1/2".
Shear, plate, 9"x8", cap. 15", m. d.
Shear, plate, 16"x8", m. d., 100%
Shear, single, 15" thrt., cap. 1"x1", arch. jaw, with angle shear blades.
Slotter, 15"-18" Dill, a. c. mtr..
Testing machines, 50,000 and 100,000 Riehle.
Tumbling barrel, No. 1 Baird.
Turret lathe, No. 1 Bardons & Oliver, plain head.
Turret lathe, 20" Bullard.
Turret lathes, Libby, 18", 22" & 26".

SECOND-HAND MACHINERY

FOR SALE BY

Reliance Machinery Sales Company

Brighton Road at Pennsylvania Ave.,

Pittsburgh, Pa.

Air compressor, 321' Laidlaw, b. d.
Bolt cutter, 1" National, cap. $\frac{1}{2}$ to 1".
Bolt cutter, 2" Acme, cap. $\frac{1}{2}$ to 2".
Boring mills, 30" Bullard, 1 head.
Boring mill, 34" Colburn, 1 head.
Boring mill, 48" Bickford, new.
Boring mill, 72" Betts vert., 2 hds.
Boring mill, 90" Niles vert., 2 hds.
Drill, 21" Cincinnati, s. h., t. a.
Drill, 36" Snyder, sliding head.
Drill, 2' 6" Carlton high speed radial.
Drill, 3' 6" Prentice radial, g. b., s. p. d.
Drill, 4' Mueller pl. radial, g. b., s. p. d.
Drill, 6' Prentice plain radial.
Grinders, No. 60 Heald cylinder, (2).
Hammer, 40 lb. Bradley, cush. helve.
Keyseater, 4" Davis, belt drive.
Lathe, 14" x 8' Whitcomb-Blaisdell.
Lathe, 15" x 6' Sebastian, q. c. g.
Lathe, 18" x 8' Cin'ti, d. b. g., q. c. g.
Lathe, 20" x 8' Lodge & S., q. c. g.
Lathe, 30" x 12' Johnson, triple grd.

Lathe, 30" x 16' New Haven, bargain.
Miller, No. 2 Cincinnati, h. p., vert.
Miller, No. 3 Hendey plain.
Miller, model "B" Becker, s. p. d.
Pipe machine, No. 7 Jarecki, $\frac{1}{2}$ to 2".
Pipe machine, No. 9 Jarecki, 1 to 4".
Pipe machine, Cox, 2" to 8".
Pipe machine, Merrill, 2" to 12".
Press, No. 4 Loshbough-J., o. b. i.
Press, No. 5 L-J., o. b. i., comb. grd.
Press, No. 73 Consolidated, o. b., 2" st.
Press, No. 74 Consolidated, o. b., 2" st.
Press, No. 65 Consolidated, geared.
Punch, Cleve., 24" thrt. $\frac{1}{2}$ x $\frac{1}{2}$, m. d.
Punch, Cleve., 15" thrt., 1" to 1", m. d.
Screw mchs., No. 52 National-Acme.
Screw machine, No. 2 Foster, pl. hd.
Screw machine, No. 2 W. & S., pl. hd.
Shaper, 20" Cincinnati b. g. crank.
Shear, No. 38 L. & A. alligator, 14".
Slotter, 10-12" Dill, belt drive.
Squaring shear, 96" Stoll, 16 ga.

Our warehouse is full of bargains. What have you for sale?

FOR SALE BY

Eastern Machinery Co.,

408 E. Pearl St., Cincinnati, Ohio

A good place to buy your machinery.

MILLING MACHINES.

No. 2 Cincinnati univ., cone type, complete.
No. 3-H LeBlond univ., cone type, complete.
No. 20 Oesterlein plain, cone type.

No. 2 LeBlond plain, cone type.
No. 3-B Kearney & Trecker (Milwaukee) plain, single pulley.
No. 3-B Brown & Sharge plain, single pulley.

DRILLING MACHINES.

24" Cincinnati Bickford plain radial, gear box.
3' Cincinnati Bickford plain radial, gear box.
5' Niles-Bement-Pond full universal radial, gear box.

20" Mechanics upright, lever feed.
22" Barnes upright, b. g., p. f.
24" Hoefler upright, sliding head, b. g., power feed.
26" Cin'ti Bickford, slid. hd., b. g., p. f., gear box drive.

SHAPERS.

20" Queen City b. g. crank.
24" Cincinnati b. g. crank.

28" Smith & Mills back geared crank, gear box drive.

LATHES.

14" x 6' Bradford tool room, taper & relieving attach. & collets.
14" x 6' Lodge & Shipley, q. c.
16" x 8' Seneca Falls, q. c., with taper.

19" x 10' LeBlond, q. c., heavy duty.
20" x 12' Bradford, q. c.
22" x 16' Hamilton semi q. c., taper.
36" x 24' Putnam semi q. c., triple grd.

MISCELLANEOUS.

Bolt threader, $\frac{1}{2}$ " to 1 1/2" Acme.
Boring mill, No. 31 Lucas horiz., gear box drive.
Broaching machine, No. 3B La-Pointe, friction pulley drive.
Gear cutter, 48" No. 4 B. & S. auto.
Gear generator, 11" Gleason, bevel.
Keyseater, No. 0 Mitts & Merrill "Little Gaint."

Hammer, 90 lbs. Williams-W., pwr.
Planer, 26" x 26" x 6' Cincinnati, belt drive, 2 heads.
Punch & shear, No. 6 Long & A., dbl. end, cap. $\frac{1}{2}$ x $\frac{1}{2}$.
Turret lathe, 24" Bullard vertical, New Era type.
Turret lathe, 36" Bullard vertical, rapid production.

And many others. Send for our complete Bargain List of Rebuilt Tools—it will save you money.

SECOND-HAND MACHINERY

FOR SALE BY

McDonald Machinery Co., 1531-33 N. Broadway, St. Louis, Mo.

BOILER EQUIPMENT.

Long & A. No. 0 angle shear, 4x4x½.
Felber combination punch & slitting
shear, 1" in 1".
Scully hvy. punch, 1" in 1", thrt. 20".
Long & A. No. 4 punch & shear.

H. & J. No. 0 punch, 1" in 1", 14" thrt.
Wangler ½" plate beveling shears, (2).
Badger punch, 36" throat, ½" in ½".
Miscellaneous equipment, screw
punches, taps, flues, etc.

MISCELLANEOUS.

Brake, 8'.
Lathes, 40—9" to 24" South Bend;
27"x12' Bridgeford, q. c. g.
Milling mchs., Milwaukee No. 1B,
Hendey No. 2 universal, American
No. 1½ univ.; Becker model SD
vert., with rotary table, wt. 16,000
lbs.; 20 plain millers
Planers, 36"x36"x23' Sellers, 2 hds.;
42"x42"x16' Pond, 2 heads.

Presses, 4 No. 2 Rockford and Con-
solidated, 3 No. 19 Bliss.
Screw mchs., B. & S. No. 00, Foster
No. 3 hand, 2 Woods No. 2 tilt. tur.
Shapers, new 12", 14", 16" & 20";
36" Fellows, gear.
Sheet metal tools, Yoder, 1 doz.
Slitting shear, No. 10 Quickwork.
Tire press, 20-ton hydraulic.

FOR SALE BY

Norton-Broadway Machinery Co., 236-38 Broadway, Cincinnati, O.

Some Good Machinery at Low Prices:

PLANERS.

42"x42"x26' Cincinnati, 2 hds. \$2900.	16"x18"x48" New York..... \$ 225.
42"x36"x20' Cincinnati, 4 hds. 3600.	16"x18"x36" Schneider-G. 300.
36"x36"x12' Gray, 2 heads. 1000.	16"x18"x48" Hendey..... 230.

LATHES.

39"x19' New Haven, raised to 42".....	\$1100.
36" raised to 56"x25' Worthington, for stone work.....	450
24"x12' Putnam, heavy duty, Pacific Coast type.....	1200.
20"x10' Schumacher, Boye & Emmes, q. c.	600.

Many other Lathes from 12" to 26" swing.

PRESSES.

No. 5 Bliss, Stiles pattern, geared.....	\$ 775.
No. 4 Niagara inclinable.....	280.
Style A Long-Allstatter punch & shear, 2" thru 1½".....	850.

Nos. 4, 6 & 7 Long & Allstatter.

SHAPERS AND DRILLS.

24" Hendey, gear driven..... \$ 325.	15" Rockford, crank..... \$ 300.
20" Columbia, crank, late type.....	24" Bickford, tapping attachment.
heavy duty, guaranteed..... 750.	Also a number of 22" and 20" drills.
16" Queen City, crank..... 375.	

BORING MILLS.

36" Niles, 2 heads..... \$ 650.	42" Bullard, 2 heads..... \$1500.
42" Colburn, 2 heads..... 1250.	84" Niles, 2 heads..... 1950.

MILLING MACHINES.

No. 5 Brown & Sharpe plain..... \$ 850.	Also Nos. 4, 3, 2 and 1½ Cin-
No. 3 Brown & Sharpe plain..... 600.	cinnati plain & universal.
No. 2B B. & S., single pulley..... 950.	

COMPRESSORS.

4½x4½ Ingersoll, tank..... \$ 110.	12"x12" Curtis, vert., rebuilt..... \$ 750.
6"x6" Clayton, belt driven.....	450' cap. Chicago Pneumatic,
10"x10" Ingersoll-Sar., rebuilt, 450.	steam driven, rebuilt..... 750.
8"x8" Chicago Pneu., rebuilt..... 375.	

MISCELLANEOUS.

Gisholt, 21", 2½" hollow sp..... \$ 500.	Screw machine, No. 1 Brown
Grinder, 12"x42" Landis..... 550.	& Sharpe, wire feed..... \$ 325.
Grinder, No. 3 B. & S. univ..... 650.	Turret, J. & L. 2"x24", with
Keyseater, No. 2 Mitts & Mer-	motor 220 volt..... 400.
rill, lot extra cutters.....	Turret, No. 6 Warner & Swasey,
Pit lathe, old style, 60"..... 300.	excellent, extras..... 775.

Also large stock of Gear Cutters, Heaters, Boilers, Pumps, Leather Belt-
ing, Pulleys and supplies.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., - - - **Bridgeport, Conn.**

AUTOMATIC SCREW MACHINES.

10 No. 72 and 2 No. 73 National Acme automatic screw machines. These machines are four spindle and will do everything but cut threads. Price, each.....\$600 and \$700.

FOR SALE BY

J. J. O'Brien Machinery Co.,

1511 N. Broadway, St. Louis, Mo.

Bolt header, 4" Acme.
Drill, 3-spindle Avey ball bearing.
Lathe, 14"x6" Lodge & Shipley.
Lathe, 15"x6" Sebastian, 4-step cone.
Oil extractor, Curtis No. 150.
Planer, 24"x24"x5'.

Press, 4" Emco pedestal.
Screw machines, National Acme Nos. 52, 53 and 515.
Screw machines, Woods tilted turret.
Screw machine, hand, No. 3 Bardons & Oliver, p. f. turret.

FOR SALE BY

J. N. Moyer,

117 N. Third St., Philadelphia, Pa.

POWER PRESSES, INCLINABLE

No. 19 Bliss, 24" stroke.
No. 5 Zeh & Hahnemann.

No. 95 Standard, 34" stroke.
No. 3 Rockford, 34" stroke.

POWER PRESSES, MISCELLANEOUS.

No. 74 Consolidated, 24" stroke, (3).
No. 65 Consolidated, s. s., geared.

No. 162A Consolidated, dbl. crank.
E-954 Ferracute embossing, (2).

FOR SALE BY

Chas. Molitor Machinery Co.,

118-124 S. Clinton St., Chicago, Ill.

Special Bargains.

Readers.

Bolt cutter, 2" Murchey.

Bolt cutter, 1" Webster & Perks, double head.

Bolt cutter, 1 1/2" Geometric, sgl. hd.

Rollers, 4"x10'.

Shears, square, 52".

Welder, spot, Toledo 7 ga., 40" gap.

Large stock modern machine tools, such as lathes, millers, shapers, planers, screw machines, drills, punch presses, etc. Write for list.

FOR SALE BY

Carbon Steel Company, Ft. 32nd St. & A. V. R. R., Pittsburgh, Pa.

The complete liquidation of the Carbon Steel Company makes available the following tools:

Bending mche., Crosgrave sgl. grd., 6' 8" width of head, 54" flywheels.

Cutting-off machine, Niles Tool Works, 10" capacity, double head, 12' bed, 2 carriages, 4-step cone pulley and countershaft.

Drill, Pond Machine Co. 6" radial, belt drive.

Grinders, Espen Lucas 14x13" spindle.

Lathes, Israel H. Johnson 30"x18", back geared, 5-step cone drive, (3).

Lathe, Schumacher, Boye & Emmes 18"x8", d. b. grd., 3-step cone & c. s.

Lathe, 36"x27" roll lathe, 60" face plate.

Lathe, 30"x15", Niles-Bement-Pond.

Locomotive axle, combination cutting-off and centering machines, Niles-Bement-Pond double head, 10" capacity, 12' bed, (2).

Locomotive axle, combination cutting-off and centering machine, Fawcus, 12" capacity, steam driven, double head.

Miller, Philadelphia Mche Tool Co. d. s. 6"x12" special for test pull plates.

Shears, side cutting, Lewis Foundry, s. grd., 18" blade.

Shear, plate, R. D. Wood 2"x128" hyd., 26" capacity.

Shears, Mackintosh steam driven, 30 1/2" throat, 4" str., 24" shear blade, (2).

Shear, Mackintosh s. grd., 22" throat, 16" blade, 2" stroke.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., - - - **Bridgeport, Conn.**

Drill presses, Henry & Wright ball bearing 4-spindle, good condition.
 (4). Price, each \$ 175.
 Miller, No. 2 Van Norman duplex, rebuilt, with slotting attachment;
 in excellent condition. Price 1,500.
 Screw machines, automatic, old-style Brown & Sharpe (3), 1 No. 1 and
 2 No. 2. Take the lot. Price, each 100.
 Screw machines, New Britain multiple spindle automatic, (4); capa-
 city 1½"; practically new, with a lot of extra equipment. Price, each 800.
 Turret lathes, 3-A Warner & Swasey; quite a little equipment. Price 1,250.

FOR SALE BY

Niles-Bement-Pond Company, - - - **111 Broadway, New York**
 Located at our various factories

LATHES.

12"x 5' Reed, taper.	36"x17' Pond, taper, 220 v., d. c. mtr.
14"x 8' P. & W., taper.	42"x20' Niles, t. g.
16"x 6' L. & S., cone head.	48"x28' Niles, t. g.
24"x24' Niles.	50"x17' Niles, old style.
26"x10' Pond, 220 volt, d. c. motor.	54"x28' American, t. g., 220 volt, d. c. motor.
28"x12' Pond.	
36"x12' Pond, t. g., 220 v., d. c. mtr.	

TURRET LATHES

1", 2", 2½" and 3" P. & W.	21" and 28" Pond rigid turrets.
2"x24" W. & S. hollow hex.	28" & 34" Gisholts.
2"x24" Jones & L., cone hd., old.	32" Conradson-American turret.

PLANERS.

20"x20"x 6' Bement.	42"x42"x26' Pond, reversing motor.
24"x24"x 6' Powell.	48"x48"x16' Pond, reversing motor.
24"x24"x 6', 8' and 10' Whitcomb-B.	48"x48"x20' Bement, belt.
26"x26"x 6' Gray.	54"x36"x10' Bement, belt.
30"x30"x 6' & 10' Pond, 2 heads.	50"x36"x22' Pond, reversing motor.
30"x30"x 6' to 12' Pond, reversing motors.	54"x54"x22' Pond, rev. motor.
36"x36"x10' to 16' Niles.	60"x60"x20' & 24' Niles, belt.
36"x36"x12' to 16' Pond, reversing motors.	72"x72"x12' Bement, belt.
42"x42"x14' Bement.	72"x60"x14' Bement, reversing mtr.
	10'x10'x36' Betts, 220 volt, d. c. motor through belts.

MILLERS AND GEAR CUTTERS.

No. 3-B plain, 220 v., d. c. motor, Brown & Sharpe.	6x48 to 132" P. & W. old style thread millers.
No. 4 plain, cone pulley, LeBlond.	15" Gleason bevel gear generator.
No. 4 plain, cone pulley, B. & S.	No. 5 vertical, cone pulley, B. & S.
No. 5 plain, cone pulley, B. & S.	36" to 60" B. & S. spur gear cutters.
No. 4-49 Newark, 220 v., d. c. mtr.	

DRILLING MACHINES.

32" Aurora, tapping attachment.	6' Pond, 220 volt, d. c. motor.
40" Aurora, tapping attachment.	6' Niles full universal, speed box.
3½" Morris speed box radial.	12-spindle No. 13 P. & W. multiple.
5' Niles full universal, speed box.	3 spindle 23" Barnes gang.

BORING MACHINES.

36-44" Niles side hd. mill, 220 v., d. c.	4½, 5 and 6½" Niles floor borers.
51" Niles mill, with turret head.	2½ to 4½" horizontal boring and drill- ing machines.
60" Bement b. & t. mill.	

MISCELLANEOUS.

Air compressors, 324' and 835', steam drive.	Heater, 600 h.p. Cochrane, fd. water.
Crane, 3-ton, 19' span, Niles 3-motor, 220 volt, d. c.	Grinder, Mummert-Dixon portable radial, 220 volt d. c. motor.
Engines, 125, 150 and 200 h. p. Philadelphia Corliss.	Grinder, No. 6 Bryant hole gr.
Generator set, 100 k. w., 22 volt, d. c., direct connected to engine.	Grinder, P. & W. thread miller cutter.
	Pumps, 200 to 1000 gal. steam drive.
	Slotter, 18" Putnam, 220 volt, d. c. motor.

SECOND-HAND MACHINERY

FOR SALE BY

The Randle Machinery Co., 1723 Powers Street, Cincinnati, Ohio

ENGINE LATHES.

14"x 6" Carroll-Jamison, q. c.	\$ 300.	20"x12" Bradford, q. c.	\$ 750.
15"x 6" Flather, loose change.	275.	24"x12" Rahn-Larmon, quick change, taper attachment.	1,000.
16"x 8" Lodge & Shipley, q. c., t. a.	550.	36"x22" Putnam, triple geared, loose change.	1,800.
17"x 8" Sidney, quick change.	450.		

PLANERS.

60"x60"x12" Pond, 3 heads.	\$2,000.
24"x24"x 6" Gray, 1 head.	700.
28"x28"x 6" Cincinnati, 2 heads.	750.
33"x32"x12" American, 2 heads.	1,250.
36"x36"x14" American, 2 heads.	1,350.
Pedrick & Ayer open side, planes 30" wide, bed 11' long.	1,000.

MISCELLANEOUS.

Boring mill, 60" Niles vert.	\$ 750.	Radial drill, 3" Dress plain.	\$ 450.
Drill press, 20" Barnes upright, w. & l. feeds.	85.	Radial drill, 7" Niles full univ. d. c. motor dr., with motor.	1,000.
Drill press, 45" upright, back geared, power feed.	300.	Shaper, 16" Barker, bk. grd. crank, new.	550.
Drill press, 24" Kern upright, back gear, power feed.	275.	Shaper, 16" Steptoe pl. crank.	300.
Grinder, No. 60 Heald cylinder.	1,250.	Shaper, 24" Barker, b. g. crank.	675.
Miller, No. 4 Cincinnati univ.	400.	Turret lathe, H-21" Gisholt, late type.	1,350.

Many other bargains. Send us your requirements.

FOR SALE BY

The O'Brien Machinery Co.,

113 N. Third St., Philadelphia, Pa.

Bolt cutters, 1" Acme, (2).
 Broaching mche., 15-ton Hercules.
 Drill, 32" Aurora, motor driven.
 Gear cutter, 36" Gould & Eberhardt.
 Grinder, 6"x32" Norton plain.
 Grinder, Landis, internal type.
 Grinder, Landis, oscillating type.
 Hammer, 100 lb. Massillon, steam.
 Lathe, 8"x108" Fitchburg Lo-Swing.
 Lathe, 16"x8" Rahn-Larmon.
 Lathe, 18"x9" Lehmann.
 Lathe, 20"x9" Lehmann.
 Lathe, 20"x14" Powell.
 Lathe, 24"x12" Schumacher & Boye.
 Lathe, 48"x40" Niles-B.-P., grd. hd.
 Lathe, 72"x39" Fifield.
 Miller, No. 3-H LeBlond plain.
 Miller, No. 3 Kemptsmith universal.
 Pipe machine, 2" Oster.
 Pipe machine, 4" Cox.
 Pipe machine, 4" Jarecki, motor dr.
 Pipe machine, 4" Oster.
 Pipe machine, 6" Cox.
 Pipe machine, 8" Curtis & Curtis.
 Pipe mche., 8" Eaton, Cole & B.
 Pipe machine, 12" Cox.
 Pipe and bolt mche., 2" Cox combi.
 Planer, 24"x24"x6" Powell, 1 head.
 Planer, 36"x36"x12" Woodward & Powell, motor driven, 3 heads.
 Planer, 36"x36"x10" Woodward & Powell, motor driven, 2 heads.
 Planer, 54"x54"x14" Pond Machine Tool Co., two heads.
 Planer, 60"x60"x20" Putnam, 4 hds.

Presses, Nos. 18, 19 and 20 Bliss.
 Presses, approximately 50, assorted sizes, Waterbury-Farrell Foundry, weights approx. 2,000 to 5,000 lbs.
 Presses, Toledo No. 53 straight sided power, 24" stroke, (7).
 Press, No. 34 Toledo gr. str. side.
 Press, No. 4 Leffler inclinable.
 Punch, No. 2 H. & J., sgl. end, 30" thrt., motor dr., cap. 1 1/2" thru 1".
 Punch, Rock River, sgl. end, 4" thrt., motor dr., cap. 1 1/2" thru 1".
 Punch and shear, No. 3 Hilles & J., dbl. end, motor dr.; punch end, 42" thrt., cap. 1 1/2" thru 1"; shearing end, 36" thrt., cap. 1" plate, 24" round, 7 1/2"x1 1/2" flat, 5"x5"x4" angle.
 Punch and shear, No. 3 Covington, dbl. end, motor dr.; punch end, 48" thrt., cap. 1 1/2" thru 1"; shearing end, thrt. 36", cap. 11/16" plate, 5"x1 1/2" flat, 1 1/2" round.
 Radial drill, 48" Cincinnati Bickford, motor driven.
 Screw machine, No. 4 Warner & Swasey, wire feed.
 Shaper, 16" Stockbridge, motor dr.
 Shapers, 12", 14" and 16" stroke, assorted makes.
 Shapers, 24", 20" and 16" Ohio.
 Trimming press, No. 754 Bliss, straight side, with side shear attachment.
 Turret lathe, No. 64 Bardons & Oliver, wire feed, cabinet base.

SECOND-HAND MACHINERY

FOR SALE BY

Jones Machine Tool Co.,

Bolt cutters, 1½" & 2" Acme.
 Buffers, Cin'ti. a. c. motor drive.
 Drill presses, 28" Sibley & Ware (4).
 Grinder, No. 60 Heald, cylinder.
 Grinder, 60" Diamond, face.
 Lathes, 16"x8" Hendey, late type.
 Lathes, 18"x9" Hamilton, q. c. (3).
 Lathe, 20"x8" Boye & Emmes, q. c.
 Lathe, 20"x12" Bradford, q. c., t. att.
 Lathe, 24"x12" Springfield, s. q. c.
 Lathe, 30"x14" Lodge & Shipley, q. c.
 Lathe, 36"x18" Lodge & S., triple gd.
 Miller, No. 2 Cincinnati, late type.

435 E. Pearl St., Cincinnati, Ohio

Miller, No. 2 Hendey, plain.
 Planer, 32"x32"x20" American, 2 hds.
 Planer, 42"x26" Cincinnati, 2 heads.
 Press, No. 3 Niagara, o. b. inc.
 Press, No. 4 Niagara, o. b. inc. (2).
 Press, No. 44 Niagara, homing.
 Punch, No. 3 L. & A., double end.
 Shapers, 7" Rhodes, crank.
 Shapers, 20" Steptoe, b. g. crank.
 Shapers, 21" American crank.
 Turret lathe, No. 1B Foster univ.
 Turret lathes, No. 6 Warner & S. (2).
 Turret lathe, 22" Libby.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

12"x 4' Porter-Cable, c. r., q. c. g., pan bed, (4).

TURRET LATHES AND SCREW MACHINES.

14" Lodge & Davis, plain head.
 24" Davis turret boring and chucking lathe, with forming rest.
 No. 1 Warney & Swasey, p. h., a. c. and b. f. (2).
 No. 2-A Warner & Swasey g. h. turret lathes, (2).
 No. 3-A W. & S. g. h. turret lathe.
 No. 3, 14" Wood tilted turret screw machine.
 1½" Acme screw mche., p. f. to tur.

12"x60" Fitchburg Lo-Swing.

14"x 6' Hamilton.

18" Libby heavy duty turret lathe, motor driven.

26" Gisholt heavy duty turret lathe.

2"x24" Jones & Lamson g. h. flat turret lathe.

No. 00 Brown & Sharpe auto.

No. 0 Brown & Sharpe auto. (3).

No. 2 Brown & Sharpe auto. (2).

No. 2 Warner & Swasey p. h. screw mchs., a. c. & b. f., p. f. to turret.

DRILLING MACHINES.

4-spd. Fox plain bearing sensitive.
 20" W F. & John Barnes, stationary head, b. g. and p. f. (2).

Henry & Wright single spindle, h. s., b. b., with chuck.

MILLING MACHINES.

No. 7 Becker plain.
 No. 26 Becker pl., without bk. grs., with power fd., pump and tank.
 No. 1½ Rockford plain, with div. hd.

No. 15 Garvin plain, b. g.
 No. 22 Garvin, vertical spindle.
 Potter & Johnston dbl. table automatic production miller.

GRINDERS.

No. 10 Cochrane-Bly auto. bench saw filing machine.
 No. 1 Brown & Sharpe, univ.
 Type "DE" Hisey-Wolf internal.
 No. 14-16 Besly, wet ring wheel.
 No. 11 B. & S. plain grinders, (2).

Capital internal grinders.
 American drill grinder.
 Type WTA Cincinnati.
 Plain emery wh'l stand with column.
 No. 1 Wilmarth & Morman univ. cutter and reamer.

SHAPERS AND PLANERS.

16" Bertsch hvy. duty, bk. grd., comp.
 22"x22"x 5' Putnam planers (3).

42"x48"x10' Sellers planer.

METAL CUTTING TOOLS & SQUARING SHEARS.

Higley cold saw.

3" new Davis cutting-off machine.

GEAR CUTTERS AND HOBBERS.

26" & 36" No. 3 Brown & S. auto.
 No. 13 Brown & Sharpe auto.

No. 12 Barber-Colman hobbers.

HAMMERS.

Coffman post pwr. dr. hammer 25 lbs.

Cady belt drop hammer, 100 lbs.

MISCELLANEOUS.

Bench tapper, Montgomery, ½" cap.
 Bench tapper, Hubbell, ½" cap.
 Bolt cutter, 2" Morgan.
 Broaching machine, Lapointe No. 1½.

Polishing lathes, Frankfort, plain bearing (4).
 Polishing lathes, City Machine Co.
 Pulley lathe, Streit.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy-Brandt Machinery Co., 210-14 Penn Ave., Pittsburgh, Pa.

Air compressors, belted, 58, 242 and 442 cubic feet.
Air compressors, steam, 810, 1290, 2052 and 2300 cu ft.
Bulldozers, Nos. 2, 3, 4, 6 and 12.
Bulldozer, No. 30 W. W., m. d.
Drill, gang, 3-spdl. Hoefler, cap. 8".
Flanging mch., McCabe pneumatic.
Forging machines, 2" & 3".
Gear generator, 15" Gleason, m. d.
Grinder, Gisholt universal tool.
Grinder, Diamond 36", wet tool.
Grinder, 10x32 Ott universal.
Grinder, 12x48 Cincinnati universal.
Grinder, No. 4 Gardner double disc.
Lathes, 14"x 6" Hendey, grd. hd., m. d.
Lathe, 17"x12" LeBlond, g. h., t. a.
Lathe, 19"x14" LeBlond, g. h., turn.
Lathe, 24"x26" American, m. d.
Lathes, 26"x12" Putnam, cone.
Lathe, 36"x12" Wickes, q. c. g., new.
Lathe, 50"x25" Bement, triple grd.
Millers, Nos. 2 & 6 Becker vertical.
Millers, horiz. Nos. 3 & 5 Cincinnati.

Miller, vert., No. 9 Bickett.
Millers, vert. No. 3 B. & S., m. d.
Motors, 5 & 7 1/2 h. p., a. c.
Nut tappers, 10 sp. Nat., cap. 1 1/2".
Pipe machine, 12", 10", 8", 4" & 2".
Planer, 30"x30"x8" Flatther, 1 head.
Planer, 72"x16" D. & H. o. s., 3 hds.
Planer, 84"x84"x17" Pond, 3 hds.
Planer, 120"x25" Sellers, 4 hds., m. d.
Press, Ferracute, o. b. i., 6100 lbs.
Press, No. 68 Bliss, double acting.
Press, No. 51 Bliss, s. s., 1 1/2" stroke.
Punch, multiple, 110" L. & A.
Rolls, bending, 16"x1 1/2" Wickes, m. d.
Rolls, bending, 12"x5/16" H. & J.
Rolls, bending, 10"x14 ga. Bertsch.
Rolls, bending, 10"x1 1/2", horizontal.
Shaper, 32" Cincinnati b. g. crank.
Shears, alligator, cap. 1 1/2", 2", 3", 4".
Shears, guil., cap. 2 1/2", 2" & 1".
Shear, rotary, cap. 8", with circ. att.
Shear, rotary bevel, cap. 8", m. d.
Shear, 136"x1 1/2" plate, m. d.
Shear, 93"x1 1/2" plate, H. & J.

FOR SALE BY

Peninsular Machinery Co., 429 E. Jefferson Ave., Detroit, Mich.

ENGINE LATHES.

14"x 6" Prentice, l. c. g., chuck (2).
14"x 6" Bradford, q. c., with chuck.
14"x 6" Bradford, l. c. g., with chuck.
14"x 6" Monarch, q. c., (3).
14"x 8" Monarch, l. c. g., with taper.
16"x 6" Lodge & S., q. c., with chuck.
16"x 6" Cincinnati, q. c.

17"x 6" LeBlond rapid production.
17"x10" LeBlond, auto pan bed.
21"x 8" LeBlond, h. d., q. c. r., & tur.
21"x10" LeBlond auto lathe.
21"x11" LeBlond, all geared (3).
26"x10" LeBlond crankshaft.
9"x14" Porter-Cable.

DRILLING MACHINES.

6" Sipp bench, h. s., b. b.
26" Hoefler, stationary head, back gear.

24" Colburn heavy duty.
36" American sensitive radial.
No. 3 Baush multiple.

MILLING MACHINES.

No. 6 Farwell, quick change.
No. 6 Bristol, hand.
No. 1 Standard, hand.
No. U. S., hand.
No. 10 Pratt & Whitney, hand.
No. 12 Brown & Sharpe, mfg.
Type A Briggs high duty.

No. 32 Kempsmith, Lincoln.
No. 2 Cincinnati, plain.
No. 3 Hendey, universal.
No. 3 Brown & Sharpe, plain.
No. 4 LeBlond, plain, all geared.
48" Newton 2-spindle.

GRINDERS.

No. 1 LeBlond plain.
No. 1 Brown & Sharpe universal.
No. 2 Gardner disc.
No. 70 Heald internal.
14"x72" Landis plain.

No. 210 Heald magnetic.
No. 220 Badger automatic.
No. 50 Heald cylinder.
No. 24 Gardner vertical.

MISCELLANEOUS.

Band saw, metal, Napier.
Bevel gear tester, Gleason.
Hammer, No. 5 Williams & W., drop.
Metal cutter, No. 1 Gray.
Press, No. 8 Perkins, dbl. ck., gd.
Press, No. 40 Perkins, o. b. i.
Press, No. 2 Gier, bench st.

Profiler, No. 1 Garvin, 2-sp.
Screw slotter, No. 1 National Acme.
Shaper, 15" Kelly s. g. crank.
Shaper, 15" Hendey friction.
Shear, No. 552 Niagara, gap.
Tumbling barrel, No. 3-S Globe.

SECOND-HAND MACHINERY

FOR SALE BY

McMullen Mchy. Co., 66 Ionia Ave., S. W., Grand Rapids, Mich.
Grand Rapids Specials.

Blower, No. 80 American.
Furnace, No. 10 Stewart, oven.
Grinder, No. 6 Bryant.
Grinder, Cleveland, profile.
Lathe, 9x12 Porter-Cable.

Lathe, 9x21½ Sundstrand Mfg.
Lathe, 16x6 Chard.
Miller, 4" P. & W. spline.
Turret lathe, 2½x26 Greenlee.

Ask for complete list No. 101 describing entire stock, just issued.

FOR SALE BY

Herman L. Winterer, 943-53 N. Front St., Philadelphia, Pa.
LATHES.

43"x17½" Bement-Miles.
42"x16" Niles taper att.
37½"x14" Johnson d. b. g., q. c. f., t. a.
32"x12" Pittsburgh, heavy duty, q. c. g.
27"x12" Bullard.
26"x11" Wickes, q. c. g.
23"x10" Niles, q. c. g.,
25"x14" Hendey, q. c. g., taper attachment, oil pan, (2).
24"x14" Porter.

21½"x8" LeBlond.
20"x8" Walcott, d. b. g., q. c. g., (2).
20"x8" Whitcomb Blaisdell, q. c. g.
20"x10" 6" American pat. hd., q. c. g.
18"x8" Prentice, q. c. g.
19"x10" Draper, patent head.
18"x8" Davis, q. c., d. b. g.
18"x7" Chard, d. b. g., semi q. c. g.
18"x6" to 8" lathes, (6).
And many others.

TURRET LATHES.

3½x28" Pond, triangle.
3x36" Pratt & Whitney, hollow hex.
20" Acme flat, 2½", h. s. motor drive.
20x7" 6" Pratt & Whitney, back grd.
19"x7" Fay & Scott, back grd.
No. 22½ Garvin Monitor.

No. 3 Kempsmith.
14"x6" Warner & Swasey.
16"x6" Johnson, back grd.
No. 3 Bardons & Oliver back grd.
14½"x5" 3" Pratt & Whitney, (2).
No. 3 Foster Kimball.

DRILL PRESSES.

40" Barnes horizontal radials, (2).
36" Bickford radial, circular base, motor driven.
14" 6-spindle Allen sensitive.

Henry & Wright sensitive.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

33"x6" Ingersoll horizontal slab.
No. 5 Cincinnati, table 9½x50½".
No. 15 Garvin, table 12x42".
No. 3 Becker Brainard, table 12x40".

No. 3 Hendey-Norton, q. c. g.
No. 9Y Brown & Sharpe plain, (2).
No. 5-C Becker vert., rotary table.
No. 5-B Becker vert., table 14x43.

PLANERS AND SHAPERS.

12"x10"x25" Sellers planer, 4 heads.
30"x30"x8" Hewes & Phillips planer.
30"x30"x8" Putnam planer.
26½"x26"x6" Hendey planer.
24"x24"x6" Sellers planer.
45" Morton draw-cut shaper.

39" Pedrick & Ayer, open side.
26" Cincinnati.
18" double head, 16" bed Bement shaper, motor driven.
14" Warren shaper.

MISCELLANEOUS.

Band metal saw, 6x6 Napier.
Boring mill, car wheel, 60" Newton.
Boring, drilling and milling machine, 17½" Bement Niles horizontal.
Bulldozers, No. 2 Williams-W., (2).
Cold saw, 42" Newton No. 200.
Grinder, 13½"x5" Landis universal.
Grinder, Greenfield universal.
Grinder, disc, No. 17 Besly.
Grinder, disc, No. 1 Besly.
Hammer, 15 lb. Bradley helve.
Hammer, 25 lb. Little Giant, m. d.

Hammer, 60 lb. Hotchkiss.
Hammers, 60 lb. Bellefonte upright; 2.
Hammer, 500 lb. Merrill belt drop.
Hammer, 1000 lb. Merrill board drop.
Hammer, 1250 lb. Bell steam.
Keyseaters, 18" stroke Morton, (2).
Keyseater, No. 3 Mitts & Merrill.
Punch presses, all sizes, (55).
Punch & shear, Industrial Wks. d. e., capacity ½" in ¼", squaring ¼"x6".
Slotter, 14" Niles.
Tooth round'g mch., Schuchardt & S.

Large assortment of General Machinery. Send for Complete List.

SECOND-HAND MACHINERY

WANTED BY

The Bessemer Gas Engine Company,

Grove City, Pa.

We are in the market for a 72"x60"25' Planer, with 2 side heads and 2 heads on rail, motor drive, 220 d. c.; must be late type.

FOR SALE BY

Machineshop Equipment Corp., - **170 Oliver St., Boston, Mass.**

MILLING MACHINES.

Horizontal double head duplex milling machines, several sizes.
Manufacturing type milling machines, all nice ones, some new, (75).
Briggs milling machines, with power feed, fine condition, (30).

DRILLING MACHINES.

Ball bearing drills with power feed.

FOR SALE BY

Botwinik Brothers, - **21 Sylvan Ave., New Haven, Conn.**

"Connecticut Machinery Merchants"

PRODUCTION MILLERS.

39 Gooley & Edlund type A, Briggs production millers, complete and practically new; price \$175. each, f. o. b. cars, New Haven, Conn.

Wire, write or phone.

FOR SALE BY

Clark Machinery Co., **1235-45 St. Clair Ave.,** **Cleveland, O.**

Drill press, 25" Silver.	Milling machine, No. 25 Ohio univ.
Drill press, 26" Barnes.	Milling machine, No. 5 Becker vert.
Grinder, Woods universal.	Screw machine, No. 5 Foster.
Grinder, Ohio No. 3 universal.	Screw machine, No. 6 Foster.
Hack saw, 8" Atkins, motor drive.	Shaper, 10" Pratt & Whitney.
Milling machine, No. 4 LeBlond pl.	Shaper, 16" Whippy.

FOR SALE BY

Mid-West Machine Tool & Supply Company.

321-323 E. Fourth St., - **Davenport, Iowa**

Partial list of machines, some 99% new, priced to sell. Send us your inquiries.

Bolt cutter, 1 1/2" Landis.	Grinder, No. 2 B. & S., surface.
Boring mill, 44" Niles vert., new.	Lathe, 18"x8' Greaves-K., taper att.
Drill, 20" 4-spindle Rockford.	Lathe, 18"x10' Mueller.
Drill, 20" 2-spindle Rockford.	Planer, 30"x30"x8' Pond, 2 heads.
Grinder, No. 1 Landis universal.	Thread miller, Taft Pierce.

FOR SALE BY

B. C. Allen Machinery Co., - **3346 Walnut St., Chicago, Ill.**

Boring mill, 31" Niles.....	\$ 975.	Lathe, 24"x10' Greaves & K....	\$ 400.
Drill press, 20" lever feed.....	58.	Lathe, 24" Davis heavy turret.....	175.
Drill, 15" Barnes.....	35.	Miller, Whitney, hand.....	85.
Drill, 3-spindle sensitive.....	85.	Miller, No. 2 Kempsmith univ.....	900.
Drill, 4-spindle Barnes, spin-		Punch press, No. 2, solid back.....	65.
dles geared.....	675.	Punch press, No. 2 horn.....	75.
Lathe, 14"x 6.....	150.	Punch pr., No 15 Torris W. inc.....	350.
Lathe, 60"x16" Rahn sliding		Shaper, 15" American.....	225.
bed gap.....	2500.	Shaper, 16" Ohio, b. g.....	390.
Lathe, 15"x 8' American, q. c.....	225.	Shaper, 20" Barker, b. g.....	350.
Lathe, 20"x10' Reed.....	200.	Shear, 30" square.....	40.

SECOND-HAND MACHINERY

FOR SALE BY

F. H. Crawford & Co.,

299 Broadway, New York, N. Y.

Boring mill, 36" Niles.
Bulldozer, No. 6 Williams-White.
Cupolas, 2 to 24 ton capacity.
Forging machines, 1", 3", 4", 5".
Furnace, 1-ton Detroit electric.
Furnace, 42" Schwartz, oil burning.
Hammer, 8-ton Chambersburg.
Molding machines.
Planer, 36"x36"x10' Pond.

Planer, 48"x48"x22' Pond.
Press, No. 7-B Bliss.
Press, No. 7-J Bliss.
Press, No. 354 Bliss.
Press, No. 554 Toledo.
Press, No. 59 Toledo.
Radial drill, 5' American.
Sand mixer, Standard No. 6A.
Shaper, 26", traveling head.

Partial list only. We specialize in Power Presses, Forge Shop and Foundry Equipment. Tell us what you want.

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PUNCH PRESSES.

No. 2 Rockford.
No. 19½ Bliss, (2).

No. 15 Torris Wold.
No. 15 Kick presses.

DRILL PRESSES.

20" b. g., p. f., new, \$130.
14" Excelsior.

Bench type drills, \$18.
Baker heavy duty.

MILLING MACHINES.

No. 2 LeBlond.
No. 3 Kemp Smith.
No. 3-S Cincinnati, s. p. drive.
No. 1½ Baker universal.

Kearney & Trecker No. 2-A, single pulley drive.
Rockford universal.
A number of hand millers.

LATHES.

Hardinge bench lathes.
14"x6' Prentice.
16"x 6' Monarch q. c.
16"x 8' Canedy-Otto.
16"x 6' Hendey, q. c., taper att.
16"x 8' South Bend.

18"x8' Chard.
20"x 8' Lodge & Shipley, geared head, s. p. drive.
24"x10' Canadian, q. c., d. b. g., (3).
24"x10' Ryerson, semi-quick change.
Dalton Six.

PLANERS.

24"x24"x 8' Putnam.

30"x30"x 8' Fitchburg.

SHAPERS.

14" Gould & Eberhardt.
14" Flather.
16" Ohio.

16" Queen City.
24" Milwaukee.
16" Milwaukee.

SCREW MACHINES.

No. 1 Pratt & Whitney.
No. 2 Pratt & Whitney, hand.
Warner & Swasey.

No. 5 Bardons & Oliver.
Acme screw machine.
No. 2 Smith, hand.

GRINDERS.

B. & S. universal.
No. 14 Bealy, disc.

Emery grinders, \$2 and up.

PUNCHES AND SHEARS.

Perkins punch and shear.
Williams-W. punch and shear.

Long & A. 6' power squaring shear.

WOOD-WORKING MACHINERY.

Band saws, 36" Famous, new, (10).
Boring mills, Andrew, (3).
Shapers, Advance, (2).

Variety saws, Famous, (2).
Swing saws, Porter, (4).

MISCELLANEOUS.

Buffers, U. S. and Westinghouse,
5 h. p., b. b.
Hack saws, Peerless, power.
Hammer, 100 lb. Bradley helve.
Hammer, 300 lb. Bradley, helve.

Lift trucks, Barrett, 1 ton cap.
Motors, a. c. and d. c.
Radial drill, 3½' Canedy-Otto.
Woodworking machines.

Leather belting. Pulleys, shafting and hangers.

SECOND-HAND MACHINERY

FOR SALE BY

Brownell Machinery Co., 11-13 Eddy St., Providence, R. I.

BORING MILLS.

No. 1 Cleveland horizontal, 24".
No. 3-A Universal (Hudson), 3".

GEAR CUTTERS AND GRINDERS.

No. 3 Brown & S. gear cutter, 26".
No. 13 Brown & S. gear cutter, 19".
Whiton hand-feed gear cutter.
No. 612 Fellows gear shaper.
6x32 Norton plain grinder.

MILLING MACHINES.

Pratt & Whitney thread, 6x80.
24"x8' Ingersoll, fixed rail, three heads.
No. 1-M Potter & Johnston.

PLANERS.

17"x17"x 4' Whitcomb.
22"x22"x 5' Whitcomb.
30"x30"x14' Whitcomb-Blaisdell.

DRILLING MACHINES.

3' Prentice plain radial.
3' Fosdick plain radial.
4' Mueller.
5-spindle Henry & Wright, b. b.

MISCELLANEOUS.

Automatics. No. 6-A Potter & J.
Hammer, 50 lb. Standard auto.
Hammer, 200 lb. Standard auto.
Hammer, 300 lb. Standard auto.
Lathe, 42"x20" Lodge & S., g. h.

No. 1 Lucas horizontal, 3".
48" Colburn vertical, 2 heads.
No. 3 Wilmarth & Morman surface grinder.
Sanford centerless grinder.
Cleveland profile grinder.
Greenfield cutter & reamer grinder.
No. 28 Oesterlein plain.
No. 14 B. & S. universal.
No. 2 Kempsmith plain.
No. 25 Bilton, plain, back geared.

36"x36"x22' Pond, two heads, 40' over all.
42"x54"x14' Gray, three heads.
3-spdl. Cincinnati, b. b.
2-spindle Leland-Gifford, b. b., with taper attachment.
4-spdl. Demco 34A, h.s., b.b., bench.

Lathe, 26"x16' Reed, taper.
Screw machine, 14x18 Pratt & Whitney, hand.
Slotter, 12" Bement-Miles.
Turret lathe, 12" Gisholt.



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5—Single Spindle

1—Two Spindle

1—Three Spindle

2—Four Spindle

All in excellent condition

Other Machines Selected from our Stock

- No. 3 Cincinnati Vertical Miller.
- No. 5-B Becker vertical Miller.
- No. 6 Becker vertical Miller.
- No. 2B Brown & Sharpe Plain Miller, single pulley drive.
- No. 2B Heavy Brown & Sharpe Plain Miller, single pulley drive.
- No. 3 Cincinnati Plain Millers (two).
- No. 3 Kempsmith Plain Miller, latest type, excellent condition.
- No. 3 Heavy Duty LeBlond Plain Miller, with vertical attachment.
- 3 1/2" Bar Barrett Horizontal Boring Mill.
- 24" Aurora Sliding Head Drill.
- 36" Aurora Sliding Head Drills, (2).
- 24" Barnes two-spindle All-Geared Drill, with pump, etc.
- 3 1/2" Drees Radial Drills, (2).
- 5" Prentice Radial Drill.
- 24" Kelly back geared Crank Shaper.
- 30"x30"x8' Ohio late type Planer, one head on rail.
- 36"x36"x15' Betts heavy type Planer, two heads on rail.
- 30" Bullard Vertical Boring Mill, one turret head.
- 36" Niles Vertical Boring Mill, two heads.
- 42" Bullard Vertical Boring Mill, two heads, motor drive.
- 24" Bullard Vertical Turret Lathe.
- 36" Bullard Vertical Turret Lathe.
- No. 2B Binsse Horizontal Boring Mill, 2 1/2" bar.
- 6x32 Norton Grinder.
- 14x72 Norton Plain Grinder.
- 16x96 Landis Plain Grinder.
- 16x48 Landis latest type Crank Pin Grinder, almost new.
- 20"x8' Lodge & Shipley Geared Head Lathe, quick change.
- 20"x10' American Geared Head Engine Lathe, quick change.
- 21" Gisholt Turret Lathe, latest type.
- 80 lb. Bradley Helve Hammer, excellent condition.
- 1 1/2" Acme Double Head Bolt Cutter, rebuilt, excellent condition.
- No. 3 Stiles Press.
- 6' Robinson Brake.
- 10' Pond Vertical Boring Mill.

5' Reed-Prentice NEW Radial at a Second-Hand Price

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NEW 3 PHASE MOTORS CHEAP. 3 H. P. \$57.50; 5 H. P. \$67.50

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9" to 13" Barnes, h. s., cp. r., new.
12"x 5' Cleveland, geared head.
14"x 8' Young.
14"x 6' Hamilton, grd. hd., motor dr.
14"x 10' Reed-Prentice.
16"x 8' Sidney, double back geared.
16"x 8' Monarch, practically new.
16"x 8' Monarch, q. c., d. b. g.

20"x 10' Prentice, taper.
24"x 24' Prentice, with raising block.
25"x 12' Sidney heavy duty.
25"x 14' Schumacher & Boye.
28"x 8' Bridgeford, heavy duty.
30"x 12' Lodge & Shipley, grd. hd.
Ames precision bench, 1/2" & 1" cap.
8"x 60" Fitchburg Lo-Swing.

TURRET LATHES and SCREW MACHINES

1 1/2" Tilted turret hand screw mche.
1" and 1 1/2" Mulholland.
2x24 & 3x36 J. & L., dbl. equipment.
No. 3-B Foster, 8" capacity, new.

No. 6 Warner & Swasey (2).
Nos. 52 and 56 National Acme.
1/2" P. & W. automatic, single spdl.
21" Gisholt.

SHAPERS

14" Niles, traveling head.
14" Steptoe, crank.
16" American, tool room.

16" & 24" Barker, b. g. crank.
16" Smith & Mills, b. g. crank.
20" Walcott, geared.

PLANERS

24x24x 6' Pease.
36"x 36"x 12' Niles.
42"x 42"x 16' Rockford, 2 heads.

54x54x 16' Sellers, 4 heads.
60x60x 17' Betts, 2 heads.
66x66x 20' New Haven, 2 heads.

PRESSES

No. 6-A Willard, 3400 lbs. (2).
No. 1 Toledo inclinable.
Nos. 1 1/2, 2, 2 1/2 & 4 Robinson.

Emco, bench, for radio parts.
No. 3-A Bliss toggle press.
Perkins, dbl. housing, wt. 4,000 lbs.

DRILLS and RADIALS

3' Morris plain, gear box drive.
3' Gang plain.
3' and 3 1/2' Silver, new, gear box.
3 1/2' Canedy-Otto plain, new.
4' Universal Radial Drill Co. plain.
Sensitive 1, 2, 3, 4 and 6 spindle.

22", 24", 26", 28" and 32", sliding hd.
26" Barnes all geared, camel back.
Barnes 20" 4-spindle, all geared.
4-spindle Sigourney sensitive.
4-spindle Reed sensitive.
Electric drills, Thor, all sizes.

MILLING MACHINES

No. 25 Becker plain, power feed.
No. 1 B. & S. universal.
No. 2 Cincinnati universal.
No. 3 Kempsmith universal.

No. 2 H Brown & Sharpe plain
Briggs type "A" high duty, 24x8 table.
No. 7 Becker Lincoln type.
Oesterlein 24x7 1/2x18 plain.

GRINDERS

Nos. 1, 3 & 78 W. & M. surface.
No. 2 W. & P. 10x30 universal.
12x36 Cincinnati universal.
36" and 66" Yates plate.
6x32 Norton plain.
No. 60 Heald cylinder.

Nos. 2 & 3 Ohio universal & tool.
No. 4 Gardner 20" double disc.
Besly 18" double disc.
B. & S. No. 24 dbl. spdl., cylinder.
Capital internal, new, 2"x2".
Valve, Kwikway, motor driven.

MISCELLANEOUS

Band saw, metal, Klemm.
Band saws, Napier 4"x4", 10"x10".
Bending rolls, 7' for 1/2" plate.
Boring mill, 12", 2 swivel heads.
Boring mill, Bullard 34" turret hd.
Boring mill, 54" & 60" Colburn, 2 hds.
Brake, 10", 18-gauge metal.
Broaching machine, No. 3 LaPointe.
Cold saw, Burr, 3" capacity.
Compressors, 5x4, 8x8 and 12x10.
Drawing tables, adjust., 42"x6" top.
Gear millers, Bilton No. 1, (5).
Hammer, 40 lb. Bradley, helve.
Hammer, 150 lb. Standard drop.

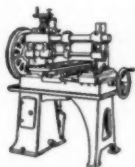
Oil separator, Springfield.
Pipe machines, 2", 4", 6" & 12".
Pumps, Gould triplex, 6x8" & 7x8".
Punch & shear 1/2" by 1/2", 10" throat.
Pyrometer, Brown 20000, 2-way.
Riveter, 1/2" Schuster.
Riveting hammers, No. 3-A h.sp. (2).
Scale, 1500 lb. Toledo, dial type.
Scleroscopes, Shore, (2).
Shear, 5' Robinson, for 10 gauge.
Shear, No. 20 Quickwork, 30" throat.
Shear, circular, Pettingell 60".
Tapping mche., 1/2" Rickert-Shafer.
Threading mche., W. & P. 2-spindle.

THE OSBORNE & SEXTON
MACHINERY COMPANY
COLUMBUS OHIO

\$125 Buys

A No. 7-H Becker Milling Machine

LINCOLN TYPE



Maximum distance table to spindle.....	9½"
Maximum length of feed.....	19½"
Working surface of table.....	9"x29"
3 Step Cone for.....	3" Belt
Net Weight	2,400 lbs.

Above machines are equipped with
countershaft, oil pan and pump

Machines In First Class Condition!

No. 2½ Hendey Millers	\$ 125.
No. 6 Whitney Hand Millers	110.
No. 13½ Garvin Plain Millers	325.
No. 22 Garvin Vertical Miller.....	250.
¾" Gridley Auto Screw Machine	525.
No. 1 P. & W. Hand Screw Machine...	225.
No. 5C Becker Vertical Millers S.P.D....	1325.
No. 3 Brown & Sharpe Vertical Miller...	1500.
6" Globe Pipe Cutting-off Machines ...	150.
14" Flather Crank Shaper.....	295.
16"x16"x45" Planer 1 Head. S.P.D....	275.
No. 1 H. & J. Sing. End Punch, ¾" cap...	475.
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36" GISHOLT turret b. and t. mill.

24" Bar Cleveland.

LATHES

14"x8' BRADFORD q. c. g., 3-step cone, sliding d. b. g.

16"x8' and 8' BRADFORD q. c. g., 3-step cone, slid. d. b. g.

18"x8' and 10' BRADFORD q. c. g., 3-step cone, fric. d. b. g.

20"x10' BRADFORD q. c. g., 3-step cone, sliding d. b. g.

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9"x12" SUNDSTRAND Mfg. lathe.

15"x6' ROCKFORD TOOL CO'S. q. c. g. lathe.

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Nos. 1 & 3 ROCKFORD hand.

Standard hand millers.

Nos. 1 & 2 ROCKFORD plain.

No. 2 ROCKFORD universal.

SCREW MACHINES

Nos. 0, 1 and 3 FOSTER plain head, a. c. and w. f.

No. 7 (29/16") FOSTER friction head, a. c. & w. f., power feed to
turret and cross slide.

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Nos. 1B, 2B and 3B FOSTER universal.

24" GISHOLT standard (6 1/2" hole in spindle).

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New & Used Nos. 2 & 3 Axle Lathes, Center Drive**

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- 1—24" Bullard, 1 turret, 1 side head.
- 1—30" Rogers & Hemphill, 1 turret hd.
- 3—36" Niles, 2 swivel heads.
- 1—42" Baush, 2 swivel heads.
- 3—52" Baush, 2 swivel heads.
- 1—84" Niles, 2 swivel heads.

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- 1—60" x 14" Featherstone, Lathe type.
- 1—96" x 14" Featherstone, Lathe type.
- 1—30" Waterman, 4" Bar, 2 facing hds.
- 1—No. 2 Niles, 4" Bar.
- 2—Binsee, 3 1/8" Bar.
- 1—Binsee, 2 3/4" Bar.

CAR WHEEL BORERS.

- 2—48" Niles, with Crane.
- 1—50" Sellers, with Crane.
- 3—48" Putnam, with Crane.

GRINDERS.

- 6—6 x 20 Fitchburg Automatic.
- 6—6 x 20 Fitchburg Plain.
- 5—10x30 Fitchburg Automatic.
- 4—10x30 Fitchburg Plain.
- 4—12x36 Fitchburg Plain.

LATHES.

- 1—New 96" x 40' Fifeild.
- 1—New 50" x 20' Fifeild.
- 1—New 60" x 40' Fifeild.
- 1—Used 36" x 26' Putnam.
- 1—Used 24" x 24' Putnam.
- 1—New 32" x 16' Advance.
- 1—Used 26" x 16' L. & S., M. D.
- 1—Used 48" Niles Car Wheel.
- 1—New 30" Oliver, Geared Head.
- 8—Used 26" x 10' Pond.

LATHES—Continued.

- 4—New 24" x 12' Cisco.
- 2—New 26" x 11' Wickes.
- 2—Used 18" x 10' Lodge & Shipley, Geared Head.
- 2—New 18" x 8' Oliver, Q. C., B. C.
- 2—Used 18" x 8' Lodge & Shipley, Geared Head.
- 1—16" x 8' Advance, Q. C., B. G.
- 5—Used 28" Gisholt Turret.
- 15—Used 3 1/2 x 60 Fitchburg Lo-swing.
- 2—Used 8 x 108 Fitchburg Lo-swing.
- 1—5" Bardons & Oliver Heavy Duty Turret.

MISCELLANEOUS.

- 1—56" x 60" x 12' Gray Planer, 2-hds.
- 1—48" Putnam Planer, 2 heads, arranged for side head.
- 1—30" x 30" x 12' Planer Ohio, 1-Hd.
- 1—24" x 24" x 6' Powell Planer, 1-Hd.
- 1—12-spdl. P. & W. Mult. Drill, 1 1/4".
- 7—No. 12 P. & W. Auto. Millers 12".
- Cleveland-Gridley-National Acme-B. & S. Automatics.
- 2—New No. 1 1/2 American Milling Machines, Plain & Universal.
- 3—18" Gleason Gear Generators.
- 4—No. 4 Warner & S. Screw mches.
- 1—Ingersoll-Rand Imperial type No. 10 Air Compressor, 1200' Capacity.
- 1—1 1/4 Ajax Forg. mch., cont. motion.
- 1—3-spindle Foote Burt Drill.
- 4—D Colburn Heavy Duty Drill.
- New Presses 58-59-59 1/2 Toledo Str. side double fly wheel.
- 1—No. 7 M. Amer. Can Str. Side Grd.
- 10—No. 3 Stecher Screw Machines.
- 1—Used 14" Betts Slotter.
- 1—Used 10" New Haven Slotter.

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- 1-60"-63"x18' Johnson.
- 1-81"x20' LeBlond.
- 1-45"x24' Pond, triple gd.
- 3-38"x42' LeBlond, q. c. g.
- 7-36"x30' Pittsburgh, q. c. g.
- 1-36"x19' Johnson, triple geared.
- 1-30"x20' American, gd. hd.
- 15-each 26"x9', 10', 12', 16', 18' and 20' Bridgeford, q. c. g.
- 6-24"x12' Providence, q. c. g.
- 1-24"x20' or 16' Lodge & Shipley.
- 89-20"x 8', 12' & 16' Amer., q. c. g.
- 6-17"x 6' LeBlond mfg. auto.
- 50-14", 16" and 18" Lathes.
- 9-Porter Cable Lathes.

DRILLING MACHINES.

- 1-3' Prentice Bros. Radial.
- 2-3' American Sens. Radial.
- 6-M-4 Natco multiple spindle.
- 1-No. 3 Fox multiple.
- 10-4 & 6 spindle Allen, b. b.
- 2-28" Superior, t. a.
- 1-28" Aurora.
- 1-25" Barnes.
- 2-No. 310 Baker.

BORING MILLS.

- 6-24" Bullard New Era vertical.
- 1-30" Gisholt vertical.
- 1-48" Colburn vertical.
- 1-60" Bullard vertical.
- 1-62" King.
- 3-Foote-Burt horizontal.
- 1-Rochester Floor Borer.

TURRET LATHES.

- 2-3"x36" Jones & Lamson.
- 1-1"x15" Pratt & Whitney.
- 9-13" Foster No. 3.
- 3-1" Foster No. 2.
- 1-1" Warner & Swasey.
- 1-14" Acme.
- 1-1" Pratt & Whitney.
- 11-24" Gisholt.

GEAR CUTTERS & HOBBSERS.

- 9-No. 1 Farwell.
- 2-Nos. 3-26 & 3-36 B. & S.
- 6-No. 6 Fellows.
- 1-11" Gleason.
- 1-No. 12 Barber-Colman.
- 1-18H Gould & Eberhardt.

CRANK SHAPERS.

- 2-16" and 20" Cincinnati.
- 10-16", 20", 24", 28" and 32" Ohio.

MILLERS.

- 2-No. 14B Special Milwaukee.
- 3-No. 2 Rockford plain.
- 2-No. 3 Kempsmith plain.
- 11-3B heavy B. & S. s. p. d.
- 1-No. 3 Brown & Sharpe.
- 1-2B Milwaukee.
- 1-No. 3A Brown & Sharpe univ.
- 1-No. 5 Ingersoll knee type.
- 1-No. 1 Brown & Sharpe vertical.
- 1-No. 3 Brown & Sharpe vertical.
- 1-No. 5 Becker vertical.
- 4-No. 6 Becker vertical.
- 9-24"x24"x12" Ingersoll slab.

PLANERS.

- 1-60"x48"x10' Gray, spiral geared.
- 3-42"x42"x16' Rockford.
- 2-36"x36"x10' Beckett.
- 5-36"x36"x18" Cincinnati.
- 1-30"x30"x10' Woodward & P.
- 1-24"x24"x12' Whitcomb.
- 1-24"x24"x 6' Hamilton.

GRINDERS.

- 46-4"x20" to 20"x96" Landis, Brown & Sharpe, Cincinnati, Modern and Norton plain and universal.
- 1-18"-30"x96" Norton gap.

PRESSES.

- 20-Nos. 57 and 58 Toledo.
- 1-No. 68 Stoll.
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Drilling Machines

1-No. 15½ Foote-Burt Multiple Spindle.....\$ 300.

8-1x6 Baker Automatics.....each 100.

Grinders

1-16x32 Landis Crank\$ 800.

1-Detroit Centerless (nearly new)..... 350.

1-Washburn Drill..... 50.

1-No. 2 Sellers Cutter..... 250.

Lathes

2-20x10 Americaneach \$ 350.

1-3¼x36 Acme Turret..... 800.

2-7x84 Lo-Swing.....each 300.

1-18x8 Lodge & Shipley 200.

Milling Machines

1-Model "B" Becker.....\$ 500.

2-Model 5B Beckereach 300.

1-No. 3 Becker 150.

1-No. 2 Rockford Boring..... 250.

1-60" Rockford Single End 200.

1-60" Rockford Double End..... 400.

Wood-Working Machines

2-No. 198 Fay & Egan Carriage Cut-off Saws.....each \$ 125.

2-No. 364 Fay & Egan Railway Cut-off Saws.....each 225.

1-30" Andrew Vertical Borer..... 175.

1-No. 533 Defiance Sill Shaper..... 300.

Miscellaneous

1-28" Hendey (Friction Type) Shaper.....\$ 250.

1-No. 138 Espen-Lucas Cold Cut-off Saw..... 400.

1-20" Ingle Tooth Rounder..... 150.

1-No. 20 Quick Rotary Shear..... 350.

1-No. 2 Quickwork Rotary Shear..... 150.

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BY-PRODUCTS DIVISION

LARGEST STOCK IN THE EAST

New and Used High Grade Modern MACHINE TOOLS

Guaranteed At Prices to Net You a Worth While Saving

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- 2-Bilton Nos. 1 & 2.
- 2-Barber-Colman No. 2.
- 4-Hercules 8".
- 2-Brown & Sharpe 3x36.
- 1-S & S. 26" spur and spiral.
- 4-Fellows, Nos. 6 & 612.
- 6-Gleason 11" & 18" dbl. tool gen.
- 2-Gleason 6" bevel.

DRILLS—Multiple Spdl., Rect. Head

- 2-NEW Baush No. 3, 21 spindle.
- 1-NEW Baush No. 4, 56 spindle.
- 1-Fox 6 spindle.
- 1-Pratt & Whitney No. 11.
- 1-Pratt & Whitney No. 12.

DRILLS—Upright and Radial

- 4-Alien single spindle.
- 16-Aiken, 5-spindle & 6-spindle.
- 4-Snyder 28" vertical.
- 1-Minster D-3, heavy duty.
- 1-Foote-Burt No. 25.
- 1-Foote-Burt 4 1/2, 4-spindle, rail.
- 2-Henry & Wright 4-spdl., b. b.
- 2-NEW Turner No. 3 vert. turret.
- 4-Hammond h. s. radial.
- 1-N.-B.-P. 96" (Ridgeway) plain. motor drive.
- 1-Western 6" plain.
- 1-6" Baush Drill.

MILLERS—Plain, Mfg. Univ. & Vert.

- 1-Le Blond No. 4 universal, s. p. d.
- 1-Le Blond No. 3 universal.
- 2-Milwaukee 2-B universal.
- 1-Kemp-mith No. 2 universal.
- 1-Becker No. 2 universal.
- 1-Brown & Sharpe No. 4 plain.
- 1-Le Blond No. 4 plain, cone drive.
- 2-Milwaukee 3-B plain.
- 1-Milwaukee 4-B plain.
- 1-Becker No. 4B and No. 3 vert.
- 6-Becker, Nos. 5C & C vertical.
- 4-Becker No. 6 vert., 62" table.
- 3-Brown & S. No. 12, mfg. type.
- 5-Pratt & Whitney No. 10.
- 2-Taylor & Fenn vertical.
- 1-Becker No. 2 vertical.
- 2-Briggs type B.

PLANERS

- 7-Putnam 26x26x8' 2 heads.
- 1-24x24x10 Woodward & P. planer.
- 1-Putnam 48"x48"x12' 2 hds., m. d.
- 1-Putnam 48"x48"x30' 4 heads.
- 1-Woodward & P. 36"x36"x12' 4hds.
- 1-Cleveland Openside 30"x30"x8'.
- 1-Cleveland Openside 30"x30"x10'.
- 1-Cleveland Openside 36"x36"x10'.
- 1-Liberty 36"x36"x12', 2 heads.

BORING MILLS

- 4-Baird 24" New Era Type vert.
- 1-Lucas No. 31, 3 bar.
- 2-N.-B.-P. 52", vertical.
- 1-Landis No. 35 horizontal.
- 1-Rockford No. 2, horizontal.
- 1-Bement-Miles 24" bar, horiz.

LATHES

- 4-Rivett No. 505 and No. 605.
 - 10-NEW South Bend 15x5.
 - 12-NEW So. Bend 16x8 & 18x8 gap.
 - 2-Hendey 14x6, taper attachment.
 - 1-Hendey 16x8, taper attachment.
 - 7-LeBlond 14x6, 16x8, 17x6 and 17x8.
 - 2-NEW Cincinnati 18x8, q. c. g.
 - 1-Greaves-Klusman 20x10.
 - 2-NEW 21x14 South Bend gap.
 - 2-NEW 24x16 South Bend gap.
 - 2-LeBlond 21x12 automobile lathes.
 - 1-Johnson 30x12, motor dr.
 - 2-Bridgford 36x30 & 36x36, gd. hd.
 - 1-Bridgford 42x32, gd. head.
 - 2-LoSwing 34x84, 2 carriages.
- NEW STAR lathes, all sizes with all attachments.

PRESSES

- 2-Toledo No. 53 Flywheel.
- 2-Toledo No. 55 Seared.
- 2-Toledo No. 55 1/2 Seared.
- 3-Toledo No. 34G Seared.

TURRET & SCREW MCHS.

- 3-Foster No. 2-B turret.
- 1-NEW Foster No. 10 turret.
- 4-Warner & S. No. 2-A turret.
- 3-Warner & S. No. 3-A turret.
- 4-Greenlee, 2 1/2x28" turret.
- 1-J. & L. 2 spindle turret.
- 20-NEW wire feed, pl. hd. screw.
- 5-Foster No. 4 screw.
- 2-NEW Milholland No. 4.
- 6-Garvin No. 1 S. P., wire feed.
- 3-W. & S. No. 6, b. g., p. f.

MISCELLANEOUS

- 1-Acme bolt cutter, 3" cap., mtr. dr.
- 1-P. & W. 36" vert. surf. grinder.
- 1-Landis 1 1/2" Bolt Cutter, dbl. hd.
- 1-Landis 2" Bolt Cutter, dbl. hd.
- 1-Landis 1" Bolt Cutter, dbl. hd.
- 1-Acme Upsetter, 1" cap.
- 1-Ajax Upsetter, 1 1/2" cap.
- 3-Higley No. 14 Cold Saws.
- 7-Miner & Peck Drop Hammers, 55 to 540 lb. cap.
- 1-Cross Tooth Rounder.
- 1-No. 6 Quickwork Rot. Shear, 1".
- 1-NEW 8" Landis Pipe Machine.

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Gridley Automatics

We have 72 Gridley Automatic Machines in sizes:

$\frac{3}{4}$ — $\frac{7}{8}$ — $1\frac{1}{4}$ — $1\frac{1}{2}$ — $1\frac{3}{4}$ — $2\frac{1}{4}$ — $4\frac{1}{4}$

These machines all have hardened and ground spindles, made from Chrome Vanadium Steel which adds at least \$150 to \$200 to their value.

All in Good Condition

We are liquidating our business and must move these machines in two months.

To do this, are making prices never before heard of:

$\frac{3}{4}$ & $\frac{7}{8}$ multiple spindles.....	\$695.
$1\frac{1}{4}$ & $1\frac{3}{8}$ " "	795.
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$2\frac{1}{4}$ single spindle	695.
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Above prices are for belt driven machines.

In sizes from $\frac{3}{4}$ to $1\frac{1}{2}$ we have motor driven as well as belt.

Motor driven machines \$50 extra, including motor.

All motors 3 ph., 60 cy., 220 v. Can be changed to 440 v. at a cost of \$3.50 each.

We also have several Cleveland Automatics from $\frac{3}{8}$ in. to $2\frac{1}{4}$ in., ranging in price from \$150 to \$350 each.

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No. S-816—2 Waterbury Farrel Foundry & Machine Co., Geared single arm pillar presses with $3\frac{3}{4}$ " stroke, $8\frac{1}{2}$ " between guides, $28"$ x $4"$ fly-wheel.

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No. S-693—1 LaPointe Co. No. 2 Broaching Machine, 52" stroke, double pulley drive.

No. S-1204—2 G. S. Blakeslee & Co., Belt Driven Niagara metal washer, gas heated, $23"$ x $12"$ x $33"$.

No. S-543—1 Oil & Waste Saving Machine Co. Washing Machine, 23" dia. x 22" high cast iron body.

Write or call and inspect at once

Standard Screw Products Co.
2559 Bellevue Ave., Detroit, Mich.

J. J. McCABE SINGER BUILDING, NEW YORK CITY

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- 120" swg., 42' Bed, Bement-Miles, triple geared belted motor drive.
- 84" swg., 46' Bed, Putnam, geared headstock, motor drive. Triple geared, complete, latest style.
- 60"x36' Bed, geared head, quick change, motor drive.
- 54" swg., 21' Bed, Pond, t. g.
- 40" swg., 16' McCabe, geared head, single pulley drive, q. c.
- 36" swg., 14' Bridgeford, geared head, motor drive.
- 32" swg., 20' McCabe, 3-step cone double back geared, q. c.
- 30" swg., 14' Bement-Miles, q. c.
- 26" swg., 14' Niles-Bement-Pond, q. c., motor drive, 11-hp. motor.
- 24" swg. x 14' Bed, Reed-Prentice geared head, single pulley drive, quick change.
- 24" swg., 10' Bed, LeBlond quick change taper.
- 18" swg., 10' Bed, McCabe, q. c.
- 16" swg., 6' Bed, Hendey, q. c.
- 14" swg., 8' Bed, Sidney, q. c.
- 34" swg., 60" Bed, Fitchburg Lo-Swing.

BORING MILLS

- 72" Niles, 2 heads.
- 50" Bullard (Bridgeport), 2 heads.
- 42" Baush, 2 heads, quick change.
- Horizontals, Floor and Knee Type.

BOILER SHOP TOOLS

- 18" Double end Long & Allstatter Punch and Shear.
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- 50" McCabe Punch and Shear.
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- 28" Espen-Lucas Cold Saw.
- 42" Newton Cold Saw.

SLOTTER

- 24" Niles - Bement - Pond, motor driven, like new.

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The Double Spindle feature of these Lathes makes it possible to combine on one bed a powerful 48" triple geared lathe and a handy 26" double back-geared lathe.

- 12' Bed, Belt Drive, complete equipment, including special set of 74" raising blocks, and internal geared face plate.
 - 16' Bed, Belt Drive, regular equipment, including internal geared face plate.
 - 18' Bed, Belt Drive, regular equipment, either plain or geared plate.
 - 24' Bed, Motor Drive, 32"-54" swing, with motor, apron control and complete equipment, like new. Now ready for shipment.
 - 32' Bed, Belted Motor Drive, complete with motor and electrical equipment. May also be run with belt, regular cone drive. Inspection may be made where lathe is still set up in operation.
- McCabe's "2-in-1" Lathe works all the time—it makes no difference whether the jobs are large or small. "The Modern Improvement on the ordinary big lathe—at a big reduction from the big price."

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- 84"x60"x30' Pond, 4 heads.
- 60"x60"x16' Gray spiral grd., 4 hds.
- 54"x54"x12' Pond, 4 heads.
- 48"x48"x15' Pond, 2 heads.
- 26"x36"x 6' Niles, 1 head.
- 42"x36"x16' Detrick & Harvey, open side.

SHAPERS

- 12" stroke, plain, Smith & Mills.
- 14" stroke, plain, Smith & Mills.
- 24" stroke, back geared, Gould & Eberhardt.
- 48" stroke, Morton Draw Cut, heavy style.

DRILLS

- 24' Arm Radial with gear box.
- 3' Arm Radial cone drive.
- 4' Arm Radial with gear box.
- 42" Back Grd., sliding hd., hvy. type.

J. J. McCabe Lathe & Machinery Corp'n
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Our Pipe Benders Meet The Demand



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Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

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Daily Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

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New Britain Machine Co., New Britain, Conn.

Balancing Ways

Anderson Bros. Mfg. Co., Rockford, Ill.
Bowsher Co., N. F., South Bend, Ind.

Balls, Bearing and Burnishing

Abbott Ball Co., Hartford, Conn.

Band Saw Machines, for Metal

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago

Bars, Bronze, Cored and Solid

Bunting Brass & Bronze Co., Toledo, O.

Barrels, Tumbling

Abbott Ball Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 13th, Chicago

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Bunting Brass & Bronze Co., Toledo, O.

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Bunting Brass & Bronze Co., Toledo, O.

Bearings, Bronze

Bunting Brass & Bronze Co., Toledo, O.

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New Britain Mch. Co., New Britain, Conn.

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Hendley & Whittemore Co., Beloit, Wis.
Lenthwaite Mch. Co., T. H. 417E, 31st, N. Y.
Lourie Mfg. Co., Springfield, Ill.
New Duty Mfg. Co., Janesville, Wis.
Niagara Mch. & Tool Wks., Buffalo, N. Y.
Fedrick Tool & Machine Co., Philadelphia

Boring Bars

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Fedrick Tool & Machine Co., Philadelphia

Boring, Drilling and Milling Machines, Horizontal

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Lambert Tool Co., Cleveland, O.

Boring Machines, Horizontal

Avery Drilling Machine Co., Cincinnati
Lambert Tool Co., Cleveland, O.
Fedrick Tool & Machine Co., Philadelphia
Rockford Drilling Machine Co., Rockford, Ill.

Bronze

Bunting Brass & Bronze Co., Toledo, O.

Buildings

New Duty Mfg. Co., Janesville, Wis.

Burnishing Equipment, Ball

Abbott Ball Co., Elmwood, Conn.

Bushings, Brass and Bronze

Bunting Brass & Bronze Co., Toledo, O.

Casters for Trucks

Hamilton Caster & Mfg. Co., Hamilton, Ohio

Centers, Index

Carter & Hakes Mch. Co., W. Winsted, Conn.

Chains, Power Transmission

Whitney Mfg. Co., Hartford, Conn.

Chucking Machines

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Apex Machine Co., Dayton, Ohio
Hardinge Bros., Inc., 1770 Hartman Ave., Chicago

Chucks, Drill

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Barber-Colman Co., Rockford, Ill.
Jacobs Mfg. Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 13th, Chicago
Titan Tool Co., Erie, Pa.

Chucks, Drill and Tap

Barber-Colman Co., Rockford, Ill.
Peter Bros. Mfg. Co., Algonquin, Ill.
Scully-Jones & Co., 2012 W. 13th, Chicago

Chucks, Keyway Cutting

Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Wrenchless

Thomas Elevator Co., 31 S. Hoyne Ave., Chicago

Clamps, Die

Daily Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

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Conway Clutch Co., Cincinnati, O.
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Burke Machine Tool Co., Conneaut, Ohio
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Cordrey Machine Works, C. H., Pittsburgh, Pa.

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Cylinder Boring Machines, Portable

Fedrick Tool & Machine Co., Philadelphia

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Federal Products Corp'n, Providence, R. I.
Wallace Brothers, 160 N. Wells St., Chicago

Die Heads, Self-Opening

Apex Machine Co., Dayton, O.

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Die Sets

Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Dicing Machines

Henry & Wright Mfg. Co., Hartford, Conn.

Dies, Pipe Threading

Edgall & Keeler Mch. Wks., Edwardsville, Ill.

Dies, Self-Opening Adjustable

Rickert-Shafer Co., Erie, Pa.

Drilling Machine Heads, Multiple

National Automatic Tool Co., Richmond, Ind.
United States Drill Head Co., Cincinnati

Drilling Machines, Bench

Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Burke Machine Tool Co., Conneaut, Ohio
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.
Winterhoff Tool & Machine Co., Elkhart, Ind.

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Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Portable Electric

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Winterhoff Tool & Machine Co., Elkhart, Ind.
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Taylor & Fenn Co., Hartford, Conn.
Wisconsin Electric Co., Racine, Wis.

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Aurora Tool Works, Aurora, Ind.

Drilling Machines, Vertical

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Henry & Wright Mfg. Co., Hartford, Conn.
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Taylor & Fenn Co., Hartford, Conn.

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Federal Products Corp'n, Providence, R. I.

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Gallmeyer & Livingston Co., Grand Rapids, Mich.
Peerless Surfacing Machine Co., Troy, N. Y.
Porter-Cable Machine Co., Syracuse, N. Y.

Grinding Machines, Bench

Bodine Electric Co., 2256 W. Ohio St., Chgo.
Finley Co., J. A., Allston, Mass.
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Hisey-Wolf Machine Co., Cincinnati

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Gallmeyer & Livingston Co., Grand Rapids, Mich.
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Thompson Grinder Co., Springfield, Ohio

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Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Disc

Challenge Machine Co., Philadelphia, Pa.
Gallmeyer & Livingston Co., Grand Rapids, Mich.

Grinding Machines, Drill

Gallmeyer & Livingston Co., Grand Rapids, Mich.
LaSalle Tool Co., LaSalle, Ill.
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Face

Challenge Machine Co., Philadelphia, Pa.
Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Internal

Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
Whitney & Son, Baxter D., Winchendon, Mass.
Wilmarth & Morman Co., Grand Rapids, Mich.

Classified Finding Index

Grinding Machines, Portable Electric

Bodine Electric Co., 2254 W. Ohio St., Chgo.
Pinley Co., J. A., Allston, Mass.
Gollwitzer & Howe, 4711 W. Lake, Chicago
Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W.
Jackson Blvd., Chicago
Petersen Mfg. Co., A. H., Milwaukee, Wis.
Porter-Cable Machine Co., Syracuse, N. Y.
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Wisconsin Electric Co., Racine, Wis.

Grinding Machines, Snagging

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mchs. & T. Co., Grand Rapids, Mich.

Grinding Machines, Surface

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LaSalle Tool Co., LaSalle, Ill.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Tap

Gallmeyer & Livingston Co., Grand Rapids, Mich.

Grinding Machines, Universal

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Guards, Punch Press

Wiesman Co., The, Dayton, Ohio

Hack Saw Blades

Peerless Machine Co., Racine, Wis.

Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco
Av., Chicago
Peerless Machine Co., Racine, Wis.
Racine Tool & Machine Co., Racine, Wis.

Hammers, Air

Independent Pneumatic Tool Co., 600 W.
Jackson Blvd., Chicago
Nazel Engineering & Mch. Wks., Philadelphia

Hammers, Belt & Motor Driven

Beudry Company, Inc., Everett, Mass.
Nazel Engineering & Mch. Wks., Philadelphia
United Hammer Co., Everett, Mass.

Hammers, Power

Beudry Company, Inc., Everett, Mass.
Nazel Engineering & Mch. Wks., Philadelphia
Quickwork Co., St. Marys, Ohio
United Hammer Co., Everett, Mass.

Hammers, Riveting

Independent Pneumatic Tool Co., 600 W.
Jackson Blvd., Chicago
Quickwork Co., St. Marys, Ohio

Hobs

Barber-Colman Co., Rockford, Ill.

Hoists, Electric

Thomas Elevator Co., 31 S. Hoyne Ave.,
Chicago

Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio

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Bucher-Smith Co., East Liverpool, Ohio
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National Machine Tool Co., Cincinnati
Whitney Mfg. Co., Hartford, Conn.

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Sidney Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Bench

Hardinge Bros., Inc., 1770 Berteau Ave.,
Chicago
Monarch Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Engine

Barnes Co., W. F. & John, Rockford, Ill.
Hardinge Bros., Inc., 1770 Berteau Ave.,
Chicago
Monarch Machine Tool Co., Sidney, O.
Mueller Machine Tool Co., Cincinnati
Sebastian Lathe Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Foot Power

Barnes Co., W. F. & John, Rockford, Ill.

Lathes, Fox Monitor

Barker Co., Wm., Covington, Ky.

Lathes, Short Bed

Monarch Machine Tool Co., Sidney, O.
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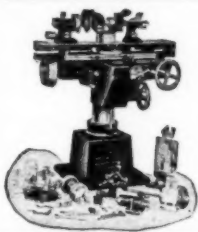
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Canton, Ohio



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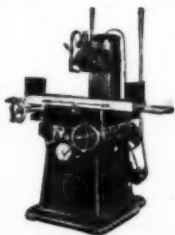
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